November 1-4, 2026
Hangzhou, China

ACP 2026

The Asia Communications and Photonics Conference



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Progress in Optoelectronics and Communications (POC) | LUSTER

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Welcome to the Asia Communications and Photonics Conference

It is our great pleasure to welcome you to the Asia Communications and Photonics Conference (ACP) and share the latest advances in communication and photonics science, technology, and innovations from leading companies, universities, and research institutions around the world. ACP is the largest conference in the Asia-Pacific region dedicated to optical communications, photonics, and related technologies. Established in 2001, ACP has been held annually and is jointly sponsored by the IEEE Photonics Society, Optica, SPIE, Chinese Optical Society (COS), China Institute of Communications (CIC), and China Instrument and Control Society (CIE).

The ACP technical conference offers a comprehensive program including plenary, tutorial, invited, and contributed talks delivered by leading international academic and industry researchers. This year, the conference revolves around four main tracks: D-Track, N-Track, T-Track and NP-Track, covering optoelectronic devices, optical networks, optical transmission, and non-telecom photonics. With its broad and high-quality technical program, ACP provides an ideal venue to explore emerging research directions and engage with top researchers driving these advances. Nearly 800 papers are scheduled, including over 100 invited and 16 tutorial presentations by many of the world's most prominent experts. The poster session will be held from 15:30 to 17:30 on November 3, providing an excellent opportunity to meet the authors and discuss technical topics in depth. We sincerely thank all contributors and authors for making ACP a truly outstanding global event.

The Plenary Session on the morning of November 2 will feature three distinguished speakers, including Professor Sir David Payne from University of Southampton on "Re-Imagining the Global Internet: 'Nothing' is better than silica fiber," Dr. Dennis Cai from Alibaba Cloud on "Network Architecture Evolution for the Agentic AI Era," and Dr. Glenn Parsons from Ericsson on "The Optical Foundation of the AI and 6G Era: Connecting Compute, Communications, and Intelligence", providing a unique opportunity to hear cutting-edge advances and insights from leading experts in optical communication and photonics.

We also host a rich lineup of exciting activities, including workshops, industry forum, Industry Horizon program, academic forum, student event and short course. Workshop and industry forum are free of charge for all conference registrants. We sincerely thank the organizers and speakers for their contributions to an excellent program.

Best Top-Score Paper Award, Best Student Paper Award, and Best Paper Award in Industry Innovation will be presented to the winners at the banquet on Tuesday, November 3. Best Top-Score Paper Award represents an exciting new initiative. The top 5% of submissions will be designated as Top-Score Papers, and be invited to publish extended versions in the *Progress in Optoelectronics and Communications (POC)*.

In addition to the technical program, the conference will feature an impressive range of exhibitions from relevant industries, publishers, and professional organizations.

As the host city of ACP 2026, Hangzhou, the capital city of Zhejiang Province, is famed as "Paradise on Earth". It is home to three UNESCO World Heritage Sites: West Lake, the Grand Canal and the Archaeological Site of Liangzhu. With a recorded history of over 2,200 years, this ancient capital perfectly combines poetic natural landscapes with booming digital and photonic industries. West Lake's Three Ponds Mirroring the Moon, printed on China's one-yuan banknote, is the city's most recognizable attraction. The city also enjoys a reputation as the home of silk and fine Longjing tea.

Organizing a conference of this scale is a tremendous task, and success would be impossible without the dedicated efforts of many supporters and volunteers. We are deeply grateful to the entire Technical Program Committee and Subcommittee Chairs, who have worked persistently throughout the year to invite speakers, solicit and review papers, and organize technical sessions, resulting in an excellent technical program. We also thank the staff and volunteers of Westlake University and Zhejiang University, professional societies such as the IEEE Photonics Society, Optica, SPIE, COS, CIC, and CIE, together with Learning Conference and BRIGHTEN CORE for organizing and sponsoring this outstanding event.

Sincerely,

ACP 2026 General Chairs



William Shieh
Westlake University, China



Daoxin Dai
Zhejiang University/ China Jiliang University, China



Yikai Su
Shanghai Jiao Tong University, China

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D-Track: Devices
D1: Advanced Packaging, Interfacing, and System Integration
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Nicolas K. Fontaine, Nokia Bell Labs, United States

Xianshu Luo, IME, Singapore
Guangwei Cong, AIST, Japan
Stanley Cheung, North Carolina State University, United States
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Huashun Wen, Nankai University, China
Shanshan Yu, Lightelligence, China
Fengman Liu, Institute of Microelectronics of Chinese Academy of Sciences, China
Andrew Poon, The Hong Kong University of Science and Technology, Hong Kong, China

D2: Integrated Photonic Circuits and Heterogeneous Platforms

Hongtao Lin, Zhejiang University, China ***subcommittee chair***
Jianjun Zhang, Institute of Physics, Chinese Academy of Sciences, China
Zhaohui Li, Sun Yat-sen University, China
Bart Kuyken, Ghent University, Belgium
Jiangwei Man, HISILICON, China
Alberto Montanaro, CNIT, Italy
Jingyi Tian, Westlake University, China
Nan Qi, Institute of Semiconductor, Chinese Academy of Sciences, China
Yonghui Tian, Lanzhou University, China
Xuhan Guo, Shanghai Jiao Tong University, China
Fang Wang, Shanghai Institute of Technical Physics of the Chinese Academy of Sciences, China

D3: Active Optoelectronic Devices

Xingjun Wang, Peking University, China ***subcommittee chair***
Haowen Shu, Peking University, China
Hiroyuki Tsuda, Keio University, Japan
Tiantian Li, Xi'an University of Posts and Telecommunications, China
Daquan Yang, Beijing University of Posts and Telecommunications, China
Xiaobei Zhang, Shanghai University, China
Ping Zhao, Sichuan University, China
Hui Cong, Institute of Semiconductors, Chinese Academy of Sciences, China
Baile Chen, ShanghaiTech University, China
Bin Zhang, Sun Yat-sen University, China

D4: Passive Photonic Components Across Domains

Wenfu Zhang, Xi'an Institute of Optics and Precision Mechanics of Chinese Academy of Sciences, China ***subcommittee chair***
Lin Sun, Soochow University, China
Yating Wan, KAUST, Saudi Arabia
Ting Wang, Institute of Physics CAS, China
Xiaojun Xie, Southwest Jiaotong University, China
Ke Xu, Harbin Institute of Technology, Shenzhen, China
Minhao Pu, Technical University of Denmark, Denmark
Juejun Hu, Massachusetts Institute of Technology, United States
Cheng Wang, City University of Hong Kong, Hong Kong, China
Hao Hu, Technical University of Denmark, Denmark
Yu Zhang, Huazhong University of Science and Technology, China
Xiaoxiao Xue, Tsinghua University, China

N-Track: Networks

N1: Network, System and Service Innovations

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Zhangyuan Chen, Peking University, China
Yi Dong, Beijing Institute of Technology, China
Bingli Guo, Beijing University of Posts and Telecommunications, China

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Yongli Zhao, Beijing University of Posts and Telecommunications, China
Rui Wang, University of Bristol, United Kingdom
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N2: Photonics for Data Center and Computing Systems

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Wei Wang, Beijing University of Posts and Telecommunications, China
Yuxin Xu, Zhejiang University of Technology, China
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Liangjun Lu, Shanghai Jiao Tong University, China
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Zuqing Zhu, University of Science and Technology of China, China
Huaxi Gu, Xidian University, China
Pham Tien Dat, National Institute of Information and Communications Technology (NICT), Japan

N3: Optical Network Architectures, Control and Management

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Qunbi Zhuge, Shanghai Jiao Tong University, China
Jiawei Zhang, Beijing University of Posts and Telecommunications, China
Yongcheng Li, Soochow University, China
Yvan Pointurier, Huawei Technologies, France
Xiaoliang Chen, University of Science and Technology of China, China
Kari Clark, University College London, United Kingdom
Hiroshi HASEGAWA, Nagoya University, Japan
Francesco Musumeci, Politecnico di Milano, Italy
Wenda Ni, ByteDance Networking, United States

N4: Optical Access and Last-Mile Networks

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Jim Zou, Adtran Networks, United States
Dezhi Zhang, China Telecom, China
Yan Zeng, Huawei Technologies, China
Junwen Zhang, Fudan University, China
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Elaine Wong, The University of Melbourne, Australia
Rene Bonk, Nokia Bell Labs, United States
Jun Li, Soochow University, China
Luca Valcarenghi, Scuola Superiore Sant'Anna, Italy

N5: Industry Perspectives and Network-Centric Technology Evolution

Frank Chang, Source Photonics, United States ***subcommittee chair***
Chongjin Xie, PhotonicX AI, Singapore
Xiang Liu, Huawei, China
Di Liang, University of Michigan, United States
Gordon Ning Liu, Soochow University, China
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Scott Xin Yin, IMEC, Belgium
Scott Wilkinson, Cignal AI, United States
Xiang Zhou, Google, United States
Min Sun, Tencent, China
Xue Wang, Bytedance, China

T-Track: Transmission

T1: Short-Reach Transmission Systems for Data-Center, Access, and Mobile Networks

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Jiahao Huo, University of Science and Technology Beijing, China
Tianwai Bo, Beijing Institute of Technology, China
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Xingyu Zhou, Huawei, China

T2: Optical Transmission Systems

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Yixiao Zhu, Shanghai Jiao Tong University, China
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Danshi Wang, Beijing University of Posts and Telecommunications, China
Fan Yu, Huawei Optical Product Line Planning Department, China
Guowei Lu, Kyushu University, Japan
Haoshuo Chen, Nokia Bell Labs, United States
Takeshi Hoshida, Fujitsu Ltd, Japan
Yan He, The Hong Kong Polytechnic University, Hong Kong, China

T3: Subsystems and Digital Signal Processing for Optical Communications

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Haïk Mardoyan, Nokia Bell Labs, France
Anxu Zhang, China Telecom Research Institute, China
Deepa Venkitesh, IIT Madras, India
Zhenning Tao, Fujitsu, China
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T4: Free-Space Transmission and Communication Systems

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NP-Track: Non-telecom Photonics

NP1: Fiber-Based and Free-Space Sensing

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NP2: Microwave Photonic Devices and Systems

Xiangchuan Wang, Nanjing University of Aeronautics and Astronautics, China ***subcommittee chair***
Fei Xu, Nanjing University, China
Xihua Zou, Southwest Jiaotong University, China
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Wenhao Wang, Westlake University , China

NP3: Quantum Devices, Systems, Networking and Computing

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Shuang Wang, University of Science and Technology of China, China
Xiaosong Ma, Nanjing University, China
Biheng Liu, University of Science and Technology of China, China
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Qiang Zhou, University of Electronic Science and Technology of China, China
Chao Wang, Singapore Institute of Technology, Singapore
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NP4: Materials, Nanofabrication, and Characterization Techniques

Jianrong Qiu, Zhejiang University, China ***subcommittee chair***
Yuan Gong, University of Electronic Science and Technology of China, China
Xinyu Fan, Shanghai Jiao Tong University, China
Liaoyong Wen, Westlake University, China
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General Information

Conference Venue

Conference Venue: Hangzhou International Expo Center
Address: 353 Benjing Ave, Qianjiang Century City, Xiaoshan District, Hangzhou

Located in Qianjiang Century City on the south bank of Qiantang River, Hangzhou International Expo Center (HIEC) covers a total floor area of 850,000 square meters. The venue is in a modern simplistic style and also reflects the unique vibe of regions south of the Yangtze River. In September 2016, Hangzhou International Expo Center was unveiled as the main venue of the G20 Hangzhou Summit. In September 2023, Hangzhou International Expo Center, as the Hangzhou Asian (Para) Games Main Media Centre, the venue for the Asian Games squash competition, and the catering service provider for the Main Media Centre, once again drew global attention.

Registration

Location: Lobby at Conference Area, Hangzhou International Expo Center
08:00-20:30 Sunday, 1 November
08:00-18:30 Monday, 2 November
08:30-18:30 Tuesday, 3 November
08:30-16:00 Wednesday, 4 November

Onsite Speaker Preparation

Tutorial/Invited/Oral: 60/30/15 minutes, including Q & A.
Presenters are required to be in the session room at least 30 minutes prior to their scheduled talk to upload and check their slides. No shows of the oral presentation will be recorded and these papers will not be published. If you attend the conference but do not present your talk at the scheduled time, your attendance will be deemed invalid and the paper will not be published.

Onsite Poster Preparation

There is no fixed template for Poster. Presenters can make it according to their needs. Presenters should put up their poster before the poster session starts. Each board has a Control ID on it, please note whether it is your own Control ID. Presenters are also required to be standing by their poster during poster session to answer questions and further discuss their work with attendees.
During poster session, staff will record no-show posters and these papers will not be published. Posters put up after the end of the poster session will be counted as invalid posters, and papers will not be published either.

Poster Board Size: 1m (Length) * 2.235m (Height)
Recommended Poster Size: 1.2m (Height) * 0.8m (Width)
Poster Session: 15:30–17:30, Tuesday, 3 November
Location: Corridor on Level 2, Hangzhou International Expo Center

Note: Poster presenters are responsible to remove their posters, and the conference staff will not collect the posters left at the end of the poster session.

Demo Zone

Time: 15:30–17:30, Tuesday, 3 November
Location: Corridor on Level 2, Hangzhou International Expo Center

Best Paper Award in Industry Innovation

Any non-invited speaker, who is the first author as well as the presenting author of a paper submitted will be eligible for this award. Three papers focusing on industry and technology will be selected by the ACP 2026 Committee. Certificates and Awards will be presented to the winners at the conference banquet and award ceremony. The nominates of this award are marked Industry Innovation Nomination in this program.

Best Student Paper Award

Best Student Paper Award Competition Session: 13:30–15:30, Sunday, 1 November
Location: VIP Room 1–2, 1F
Any full-time university student, who is the first author as well as presenter of a paper submitted with choosing presentation type of "Best Student Paper Award" will be eligible for this award. Three winners will be selected by the ACP 2026 Committee. Certificates and Awards will be presented to the winners at the conference banquet and award ceremony.

Best Top-Score Paper Award

Best Top-Score Paper Award Competition Session: 08:30-17:30, Sunday, 1 November
Location: Conference Room 207, 2F & VIP Room 2-2, 2F
The top 5% of submissions will be designated as Top-Score Papers. First authors of these papers will be officially recognized as Top-Score Papers in the conference database, and be invited to publish extended versions in the *Progress in Optoelectronics and Communications*. Four winners will be selected by the ACP 2026 Committee. Certificates and Awards will be presented to the winners at the conference banquet and award ceremony.

Exhibition

The ACP 2026 Exhibition is open to all attendees.

Tea Breaks

10:00-10:30 Sunday, 1 November
15:00-15:30 Sunday, 1 November
10:00-10:30 Monday, 2 November
15:30-16:00 Monday, 2 November
10:00-10:30 Tuesday, 3 November
15:30-16:00 Tuesday, 3 November
10:00-10:30 Wednesday, 4 November
15:30-16:00 Wednesday, 4 November

Lunches

Location: Press Conference Room, 2F
12:00-13:30 Monday, 2 November
12:00-13:30 Tuesday, 3 November
12:00-13:30 Wednesday, 4 November

Dinner

Location: Press Conference Room, 2F
17:30-20:30 Sunday, 1 November
17:30-20:30 Tuesday, 3 November

Welcome Reception

Location: No.3 Bridge, 2F （三号桥）
18:30-20:30 Monday, 2 November

Banquet and Award Ceremony

Best Top-Score Paper Award, Best Student Paper Award, and Best Paper Award in Industry Innovation will be presented at the banquet. The banquet is NOT INCLUDED in the registration fee for students, but is included for all other regular registration types. The ticket is provided within the badge.
Location: Multi-function Hall, 1F
Time: 18:30–20:30, Tuesday, 3 November

Notes

1. Volunteers and staff will wear yellow slings. If you have any questions, you can contact them or come to the conference registration table for help.
2. A shuttle bus runs between Sofitel Hangzhou Yingguan and the venue in the morning and evening.

Program at a glance

	November 1 Sunday	November 2 Monday	November 3 Tuesday	November 4 Wednesday
Registration Lobby at Conference Area, 1F	08:00-20:30	08:00-18:30	08:30-18:30	08:30-16:00
Workshop 1F & 2F	08:30-17:45			
Industry Forum Conference Room 101, 1F	09:00-17:50			
Industry Horizon program Conference Room 205, 2F	09:30-17:00	13:30-17:00	08:30-17:00	
Opening Ceremony Multi-function Hall, 1F		08:30-08:45		
Plenary Session Multi-function Hall, 1F		08:50-12:10		
Technical Session 1F & 2F		13:30-18:00	08:30-15:30	08:30-17:30
Poster Session & Demo Zone 2F			15:30-17:30	
Best Top-Score Paper Award Competition Session Conference Room 207, 2F & VIP Room 2-2, 2F	08:30-17:30			
Best Student Paper Award Competition Session VIP Room 1-2, 1F	13:30-15:30			
Post-deadline Paper Session Conference Room 102B, 1F				13:30-15:30
Exhibition 1F & 2F	09:00-18:00	09:00-18:00	09:00-18:00	09:00-18:00
Student Event Press Conference Room, 2F		12:00-13:30		
Academic Forum Conference Room 102C, 1F	08:00-12:00			
Fiber Short Course Conference Room 102B, 1F	10:00-12:00			
Welcome Reception No.3 Bridge, 2F		18:30-20:30		
Banquet & Award Ceremony Multi-function Hall, 1F			18:30-20:30	
Special Event II-Recruitment Information Session/ 招聘宣讲 Conference Room 101, 1F	19:00-21:00			

Conference Map-1F

November 1

Conference Room 103A
Workshop: Fit-for-Purpose or Falling Behind? Rethinking Optical Network Design for the Scale-Across Era
Conference Room 103B
Workshop: Free-Space Optical Communications for Terrestrial, Aerial and Space Networks: Which Frequency Bands for Which Scenarios?
Conference Room 103C
Workshop: Key components and signal processing for high-speed and real-time opical transmission systems
Conference Room 102A
Workshop: Advanced opto-electronic and optical fiber packaging
Workshop: Silicon and Heterogeneously Integrated Photonics Towards Sub-pJ/bit, Multi-Tbps Optical I/O and Next-Generation AI Clusters
Conference Room 102B
Workshop: Path to Very High Speed PON: Requirements, Components, and Solutions
Special Event: Fiber Short Course
Conference Room 102C
Workshop: POC Workshop on Trends in Optoelectronics and Communications
Special Event: Academic Forum for Postgraduates in Optical Communications 2026
Multi-function Hall A
Workshop: Programmable photonics and applications
Multi-function Hall B
Workshop: Optical Satellite Networking and In-Orbit Computing: Towards Integrated Space Communication and Computing
Multi-function Hall C
Workshop: Photonic Systems for AIDC: From Optical Fabrics to Computing and System Co-Design
Conference Room 101
Industry Forum: All-Optical Network in the Intelligent Era
VIP Room 1-2
Best Student Paper Award Competition Session

November 2

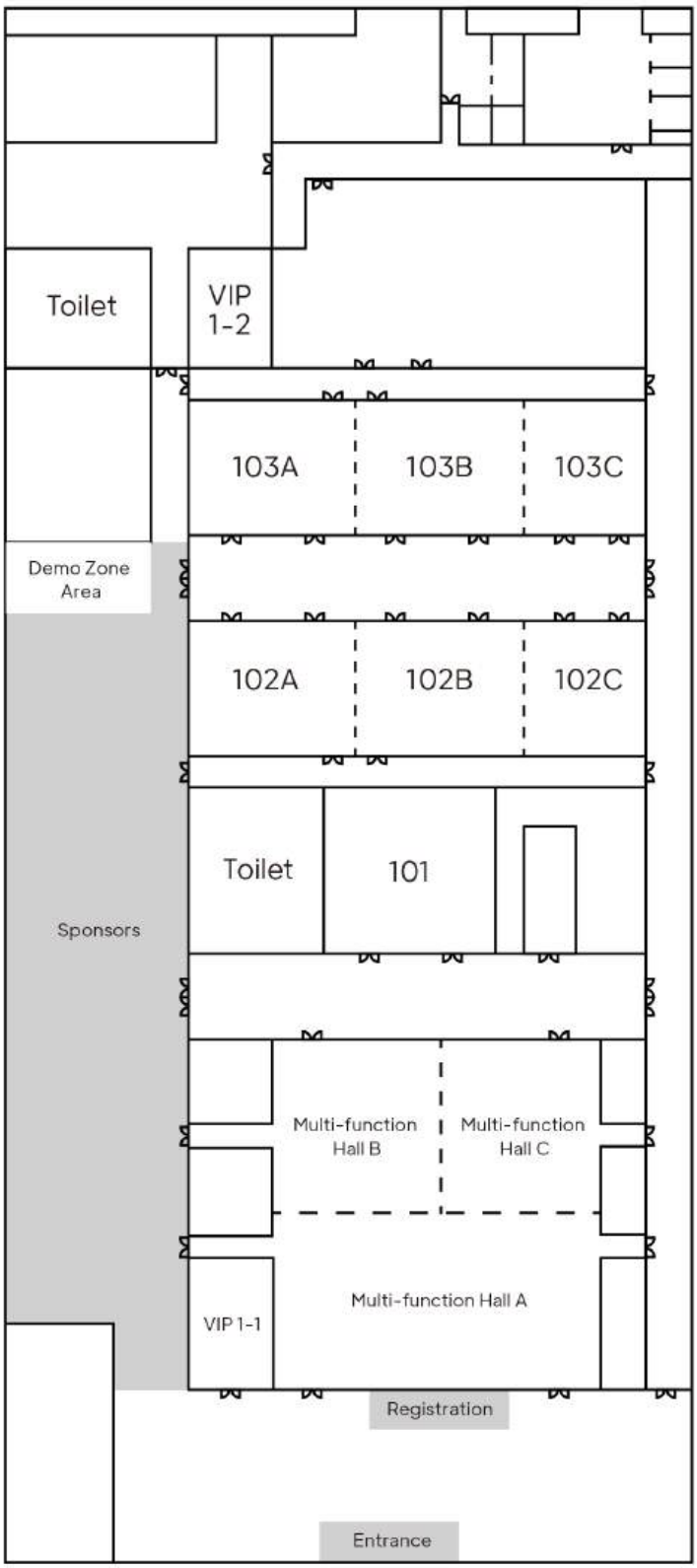
Conference Room 103A
D1: Advanced Packaging, Interfacing, and System Integration
Conference Room 103B
D2: Integrated Photonic Circuits and Heterogeneous Platforms
Conference Room 103C
D3: Active Optoelectronic Devices
Conference Room 102A
D4: Passive Photonic Components Across Domains
Conference Room 102B
N1: Network, System and Service Innovations
Conference Room 102C
N3: Optical Network Architectures, Control and Management
Multi-function Hall A
T1: Short-Reach Transmission Systems for Data-Center, Access, and Mobile Networks
Multi-function Hall B
T2: Optical Transmission Systems
Multi-function Hall C
T4: Free-Space Transmission and Communication Systems
Conference Room 101
NP4: Materials, Nanofabrication, and Characterization Techniques

November 3

Conference Room 103A
D1: Advanced Packaging, Interfacing, and System Integration
N2: Photonics for Data Center and Computing Systems
Conference Room 103B
D2: Integrated Photonic Circuits and Heterogeneous Platforms
NP4: Materials, Nanofabrication, and Characterization Techniques
Conference Room 103C
D3: Active Optoelectronic Devices
N4: Optical Access and Last-Mile Networks
Conference Room 102A
D4: Passive Photonic Components Across Domains
Conference Room 102B
N1: Network, System and Service Innovations
N3: Optical Network Architectures, Control and Management (Parallel Session)
Conference Room 102C
N3: Optical Network Architectures, Control and Management
Multi-function Hall A
T1: Short-Reach Transmission Systems for Data-Center, Access, and Mobile Networks
Multi-function Hall B
T2: Optical Transmission Systems
T3: Subsystems and Digital Signal Processing for Optical Communications
Multi-function Hall C
T4: Free-Space Transmission and Communication Systems
Conference Room 101
NP4: Materials, Nanofabrication, and Characterization Techniques
NP2: Microwave Photonic Devices and Systems

November 4

Conference Room 103A
N2: Photonics for Data Center and Computing Systems
Conference Room 103B
D2: Integrated Photonic Circuits and Heterogeneous Platforms
Conference Room 103C
D3: Active Optoelectronic Devices
Conference Room 102A
D4: Passive Photonic Components Across Domains
Conference Room 102B
N1: Network, System and Service Innovations
Post-deadline Paper Session
Conference Room 102C
N4: Optical Access and Last-Mile Networks
Multi-function Hall A
T2: Optical Transmission Systems
Multi-function Hall B
T3: Subsystems and Digital Signal Processing for Optical Communications
Multi-function Hall C
T4: Free-Space Transmission and Communication Systems
T3: Subsystems and Digital Signal Processing for Optical Communications (Parallel Session)
Conference Room 101
NP2: Microwave Photonic Devices and Systems


Toilet
VIP
1-2
103A
103B
103C
Demo Zone
Area
102A
102B
102C
Toilet
101
Sponsors
Multi-function
Hall B
Multi-function
Hall C
Multi-function Hall A
VIP 1-1
Registration
Entrance

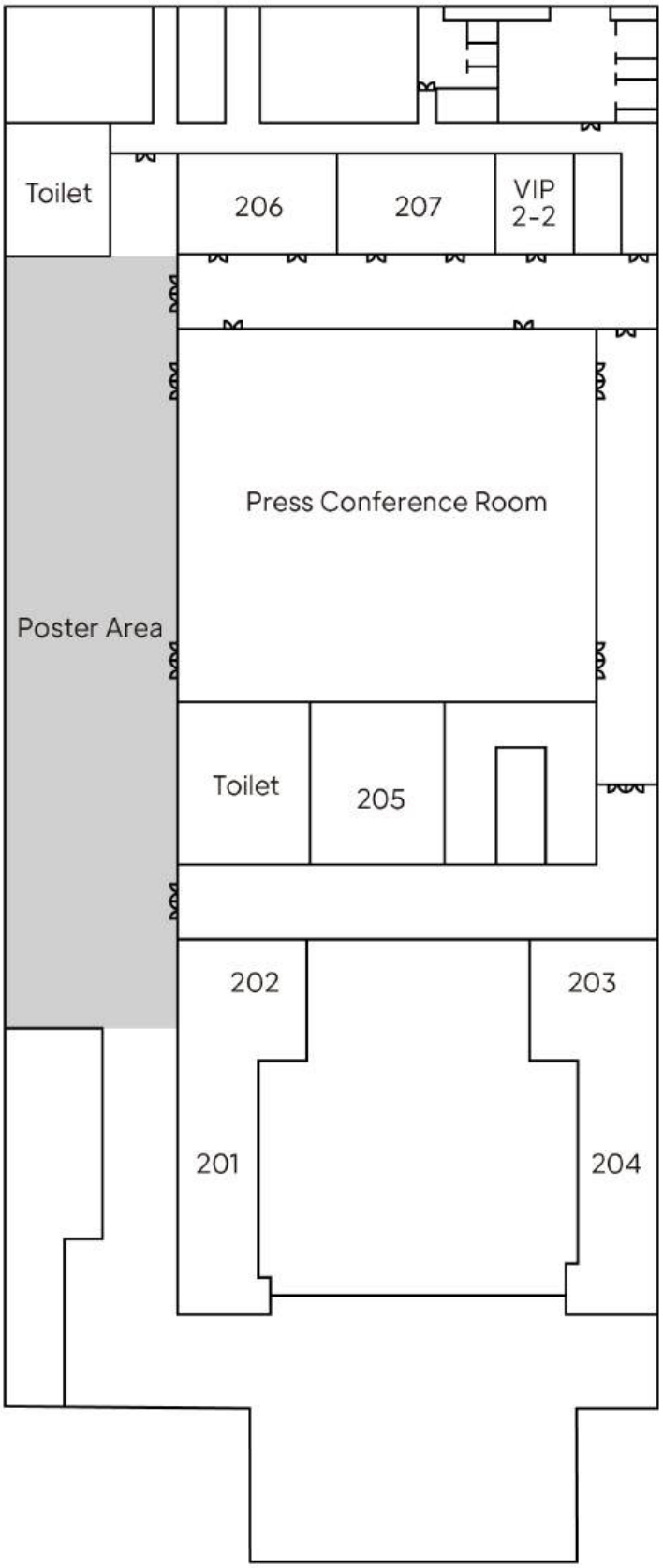
Conference Map–2F

November 1
Conference Room 205
Industry Horizon program: Market update and outlook on optical PON access and wireless fronthall & last-mile transport
Industry Horizon program: Industry debate: OCS or not OCS?
Conference Room 206
Workshop: Next Generation AI Optical Interconnects
Conference Room 207
Best Top-Score Paper Award Competition Session (D-Track & T-Track)
VIP Room 2–2
Best Top-Score Paper Award Competition Session (N-Track & NP-Track)

November 2
Conference Room 205
Industry Horizon program: Realistic check of AI interconnect scaling solutions for post 1.6T era
Conference Room 206
NP1: Fiber-Based and Free-Space Sensing
Conference Room 207
NP3: Quantum Devices, Systems, Networking and Computing

November 3
Conference Room 205
Industry Horizon program (special symposium): ION-2030 for AI Data Centers: From Scale-Up to Scale-Out, Scale-Across, and Distributed Intelligence
Industry Horizon program: Exploring Slow & wide approach using uLEDs and uVCSEL for AI scale up networks
Conference Room 206
NP1: Fiber-Based and Free-Space Sensing
Conference Room 207
NP3: Quantum Devices, Systems, Networking and Computing

November 4
Conference Room 206
NP1: Fiber-Based and Free-Space Sensing



Workshop & Industry Forum

November 1 · Sunday														
	Conference Room 103A, 1F	Conference Room 103B, 1F	Conference Room 103C, 1F	Conference Room 102A, 1F	Conference Room 102B, 1 F	Conference Room 102C, 1F	Multi-function Hall A, 1F	Multi-function Hall B, 1F	Multi-function Hall C, 1F	Conference Room 101, 1F	VIP Room 1-2, 1F	VIP Room 2-2, 2F	Conference Room 206, 2F	Conference Room 207, 2F
08:30-12:00	/	/	/	**Advanced opto-electronic and optical fiber packaging** (08:30-11:30)	**Fiber Short Course** (10:00-12:00)	**Academic Forum for Postgraduates in Optical Communications 2026** (08:00-12:00)	**Programmable photonics and applications** (08:45-12:00)	/	/	**All-Optical Network in the Intelligent Era** (09:00-12:00)	/	**Best Top-Score Paper Award Competition Session-NP-Track** (08:30-11:30)	/	**Best Top-Score Paper Award Competition Session-D-Track**
12:00-13:30	**Lunch Break**													
13:30-17:30	**Fit-for-Purpose or Falling Behind? Rethinking Optical Network Design for the Scale-Across Era**	**Free-Space Optical Communications for Terrestrial, Aerial and Space Networks: Which Frequency Bands for Which Scenarios?** (13:30-16:40)	**Key components and signal processing for high-speed and real-time opical transmission systems** (13:30-16:15)	**Silicon and Heterogeneously Integrated Photonics Towards Sub-pJ/bit, Multi-Tbps Optical I/O and Next-Generation AI Clusters** (13:30-17:45)	**Path to Very High Speed PON: Requirements, Components, and Solutions** (13:30-17:15)	**POC Workshop on Trends in Optoelectronics and Communications** (14:00-17:30)	**Programmable photonics and applications** (13:30-16:30)	**Optical Satellite Networking and In-Orbit Computing: Towards Integrated Space Communication and Computing**	**Photonic Systems for AIDC: From Optical Fabrics to Computing and System Co-Design**	**All-Optical Network in the Intelligent Era** (14:00-17:50)	**Best Student Paper Award Competition Session** (13:30-15:30)	**Best Top-Score Paper Award Competition Session-N-Track** (13:30-15:30)	**Next Generation AI Optical Interconnects** (13:30-17:15)	**Best Top-Score Paper Award Competition Session-T-Track**

Industry Horizon Program

November 1	**Market update and outlook on optical PON access and wireless fronthall & last-mile transport** (09:00-12:00) **Industry debate: OCS or not OCS?** (13:30-17:00)	Conference Room 205, 2F
November 2	**Realistic check of AI interconnect scaling solutions for post 1.6T era** (13:30-17:00)	
November 3	**ION-2030 for AI Data Centers: From Scale-Up to Scale-Out, Scale-Across, and Distributed Intelligence (Special Symposium)** (08:30-12:00) **Exploring slow & wide approach using µLEDs and µVCSEL for AI scale up networks** (13:30-17:00)	

Workshop

Fit-for-Purpose or Falling Behind? Rethinking Optical Network Design for the Scale-Across Era

Description:

Scale-Across — interconnecting geographically distributed GPU clusters into a unified AI computing fabric — is no longer a future scenario. Unlike Scale-Up and Scale-Out, Scale-Across imposes a fundamentally different and more demanding set of requirements on optical networks. Yet the optical networking community has not reached consensus on whether existing architectures, technologies, and design philosophies are adequate to meet this moment. This workshop brings together hyperscale AI operators, optical system and component vendors, and academic researchers to confront a direct question: is the optical network being designed for Scale-Across, or is it falling behind?

The following topics are proposed as the scope of this workshop.

Topic 1 | What Does Scale-Across Really Demand from Optical Networks?
Scale-Across spans a wide distance continuum — from sub-kilometer intra-campus links, to metropolitan-scale connections of 10-80km, and wide-area interconnects exceeding 100km — and across this entire range, the demand for high bandwidth is certain, but many other dimensions remain open for debate: how critical is deterministic latency for AI training workloads, and is jitter truly a problem that needs to be solved at the optical network layer, or can it be absorbed by upper-layer protocols and AI frameworks? How should client-side port rates evolve — 800G or 1.6T, single-port or multi-port aggregation, and on what timeline? RDMA is the dominant communication protocol for AI clusters — what is its relationship with the optical transport network, does the optical layer need to be aware of RDMA traffic characteristics, or can the two remain completely decoupled?

Topic 2 | Multi-Rail and Petabit Capacity: How Should Optical Network Architecture Evolve?
The push toward petabit-scale capacity is a certain direction for Scale-Across optical networks, but the path to get there is filled with open questions: is Multi-Rail an indispensable architectural choice, or an unproven concept yet to be validated at scale — what problem does it actually solve, and what additional cost and complexity does it introduce? As the electrical layer continues to evolve with ever-higher forwarding capacity, what will the next-generation transponder look like, and what level of chassis integration density is achievable? In point-to-point Scale-Across scenarios, is the wavelength flexibility provided by WSS still necessary, or is a fixed-grid architecture sufficient? Can C+L band expansion meet future capacity demands, or does reaching true petabit-scale require the introduction of the S band or even spatial division multiplexing?

Topic 3 | Protection for Scale-Across: Is What We Have Enough, or Does It Need to Be Redefined?
Protection and resilience are unavoidable topics for Scale-Across optical networks, but the answers are far from settled: what does traditional 50ms optical-layer protection switching actually mean for an AI training job — does it truly constitute a problem, or do upper-layer systems have the ability to tolerate it? Does Scale-Across require entirely new protection schemes beyond existing 1+1 and shared mesh approaches, or is optimization of current mechanisms sufficient? Should the optical transport layer and the data communications layer jointly coordinate protection decisions, or is it more robust to keep them operating independently? At what granularity should protection be defined — fiber, wavelength, cable, or flow level? Is lossless switchover technically feasible, and if so, can it deliver meaningful business value for AI workloads — and at what cost?

Topic 4 | Autonomous Management: Does a Scale-Across Optical Network Really Need It?
Autonomous management is frequently cited as essential, but its necessity and feasibility remain open questions: for an optical network purpose-built for Scale-Across, is autonomous management a nice-to-have or an operational prerequisite? If building a greenfield network from scratch with no legacy constraints, does that make autonomous management easier to achieve — and where do the real barriers lie, in technology or in organizational process? What northbound interface capabilities does the equipment need to expose, and are existing interface standards already sufficient? Across the spectrum from alarm reporting and assisted recommendation to fully closed-loop autonomy, what level of automation is trustworthy and deployable today? What telemetry sampling granularity and real-time performance are required, and can current optical network equipment support this natively, or does it demand additional infrastructure investment?

Time: Sunday, 1 November 2026 | 1:30 p.m. – 5:30 p.m.
Venue: Conference Room 103A, 1F

Organizers:

Fan Zhang, Peking University

Liang Dou, Alibaba

Agenda:

13:30-13:45 **Opening**

13:45-14:00 **Cheng Chen,** Baidu
Title: Optical Transport Evolution for Distributed AI: Making Heterogeneous AI Compute Usable

14:00-14:15 **Minggang Chen,** Tencent
Title: Scale-Across: A Paradigm Shift in Optical Networking

14:15-14:30 **Shuo Wang,** Alibaba
Title: Scale-Across Era: Evolving Optical Transport for Distributed Compute Clusters

14:30-14:45 **Jiang Li,** Huawei
Title: Rearchitecting Optical Networks for Scale Across

14:45-15:00 **Yufeng Yuan,** Coherent
Title: Optical Network Evolution in the Scale-Across Era: Pluggable or Highly Integrated

15:00-15:30 **Coffee Break**

15:30-15:45 **Li Xiao,** Accelink
Title: Bulk-Capacity Expressway: Scaling Across via Fiber Trunks

15:45-16:00 **Qunbi Zhuge,** Shanghai Jiao Tong University
Title: Service-Aware, High-Capacity, and Intelligent Optical Networks for Scale-Across Scenarios

16:00-16:15 **Danshi Wang,** Beijing University of Posts and Telecommunications
Title: Agentic AI for Scale-Across Optical Networks

16:15-16:30 **Tianhong Zhang,** Peking University
Title: Coherent-Lite Systems for Scale-Across Optical Networks

16:30-17:30 **Panel Discussion**

Free-Space Optical Communications for Terrestrial, Aerial and Space Networks: Which Frequency Bands for Which Scenarios?

Description:

Free-space optical (FSO) communications are attracting increasing interest for terrestrial, aerial and space networks. However, the optimal technical solution depends strongly on the target scenario. A terrestrial FSO link across an urban area, a ground-to-HAP/UAV link, an optical feeder link to a satellite, and an inter-satellite link all face different constraints in terms of propagation distance, atmospheric loss, turbulence, cloud blockage, pointing accuracy, terminal size, optical power, eye safety, receiver sensitivity and operational availability. Therefore, the choice of spectral band is not straightforward and should be discussed in a scenario-driven manner.

This 2-hour workshop will focus on the practical question: which wavelength or frequency bands should be used for different FSO application scenarios? The discussion will cover near-infrared (NIR) bands such as 850 nm, 1064 nm and 1550 nm, which benefit from mature telecom and space optical communication technologies; visible and ultraviolet (UV) bands for short-range, underwater, non-line-of-sight or specialized links; mid-infrared (MIR) bands for potential operation in favorable atmospheric windows and challenging weather or turbulence conditions; and THz bands as a complementary option between RF and optical systems. Rather than seeking a single "best" band, the workshop aims to build a clear mapping between application scenario, spectral window, device maturity, propagation characteristics and deployment feasibility.

The workshop will include invited talks of 10-15 minutes each, followed by a 20-30 minutes panel discussion. The invited speakers will represent academia, industry and standardization/ecosystem stakeholders. Academic speakers will address atmospheric propagation, channel modelling, modulation formats and emerging device technologies. Industrial speakers will discuss terminal design, acquisition and tracking, component availability, reliability, cost and field deployment experience. Standardization speakers will cover interoperability, eye safety, availability metrics, regulatory aspects and integration with future 6G and non-terrestrial network architectures.

The workshop will conclude with a panel discussion, addressing whether future FSO systems will mainly rely on mature near-infrared technologies, move toward MIR/LWIR and THz solutions in selected scenarios, or evolve into adaptive multi-band hybrid RF/THz/FSO architectures. The expected outcome is a concise technology roadmap connecting FSO scenarios with suitable spectral bands, modulation choices, atmospheric mitigation methods and deployment requirements.

Time: Sunday, 1 November 2026 | 1:30 p.m. – 4:40 p.m.
Venue: Conference Room 103B, 1F

Organizers:

Xiaodan Pang, Zhejiang University
Haifeng Yao, Beijing Institute of Technology
Yuzhe Lin, The Institute of Semiconductors (IOS), CAS

Agenda:

Part I: Mid-IR and THz devices and links.

Presider: **Yuzhe Lin,** The Institute of Semiconductors (IOS), CAS

13:30-13:40 **Huibin Zhou,** Huazhong University of Science and Technology, China
Title: Recent Advances in Mid-infrared Free Space Optical Communications

13:40-13:50 **Zhidong Lyu,** Zhejiang University, China
Title: Exploring mid-infrared for free-space optical communications

13:50-14:00 **Junqi Liu,** Ocean University of China
Title: Quantum Cascade Lasers for Mid-Infrared Free-Space Optical Communications

14:00-14:10 **Baile Chen,** ShanghaiTech University, China
Title: From AI Optical Interconnects to THz Wireless and MWIR Free-Space Communications

14:10-14:20 **Hua Li,** Shanghai Institute of Microsystem and Information Technology, CAS, China
Title: Terahertz semiconductor laser frequency comb and its communication application

14:20-14:30 **Ming Che,** Kyushu University, Japan
Title: Photonics-Enabled Terahertz Antenna Arrays: Toward High-EIRP and Agile-Beam Wireless Communications

14:30-15:00 **Panel Discussion I: Which scenarios benefit from mid-IR and THz?**

15:00-15:30 **Coffee Break**

Part II: FSO, VLC and UV systems and scenarios.

Presider: **Haifeng Yao,** Beijing Institute of Technology

15:30-15:40 **Buzheng Wei,** China Unicom, China
Title: Recent progress of FSOC standards

15:40-15:50 **Zhenming Yu,** Beijing University of Posts and Telecommunications, China
Title: Satellite laser communication with integrated acquisition and transmission

15:50-16:00 **Zhouyi Hu,** Beijing Jiaotong University, China
Title: Towards Wireless Intra-Data Center Networks: Millimeter Waves or Free-Space Optics?

16:00-16:10 **Zixian Wei,** Hong Kong Polytechnic University, Hong Kong, China
Title: Bidirectional Multi-Format/Rate-Adjustable Integrated Laser System for Satellite Communication

16:10-16:20 **Chao Shen,** Fudan University, China
Title: Optical Wireless Communication in the UV and Visible Regime: Technology and Applications

16:20-16:50 **Panel Discussion II: Choosing bands for terrestrial, aerial and space networks**

Key components and signal processing for high-speed and real-time opical transmission systems

Description:

This workshop focuses on key components and signal processing for high-speed and real-time opical transmission systems, covering the full chain from key devices, signal generation and reception, intelligent algorithms and system verification. The scope includes, but is not limited to, the following topics:

High-speed ADC/DAC technologies and modules
High-speed signal processing chip based on ASIC,
Analog real-time signal processing,
Real-time signal processing and applications (Satelite,sensing and GPU)

Time: Sunday, 1 November 2026 | 1:30 p.m. – 4:15 p.m.
Venue: Conference Room 103C, 1F

Organizers:

Jing Zhang, University of Electronic Science and Technology of China
Qi Yang, Huazhong University of Science and Technology
Fan Zhang, Peking University
Jianming Tang, Bangor University

Agenda:

Presider: **Qi Yang,** Huazhong University of Science and Technology

13:30-13:45 **Junwen Zhang,** Fudan University
Title: Real-time FPGA-based DSP and Coherent Reception for High-speed Short-Reach Optical Connection and Access

13:45-14:00 **Danshi Wang,** Beijing University of Posts and Telecommunications
Title: Multi-Objective Parameter Self-Refinement for Digital Twin of Multi-Band Transmission System

14:00-14:15 **Zhenming Yu,** Beijing University of Posts and Telecommunications
Title: Integration of Communication and Computational Imaging

14:15-14:30 **Bin Chen,** Hefei University of Technology
Title: GPU-Based DSP for Real-Time Optical Communication: Can It Meet the Requirements

14:30-14:45 **Yan Li,** Beijing University of Posts and Telecommunications
Title: Signal processing for satellite-ground laser communications

14:45-15:15 **Coffee Break**

Presider: **Jing Zhang**, University of Electronic Science and Technology of China

15:15-15:30 **Fan Li,** Sun Yat-sen University
Title: Multi-Scale Optical Interconnects for AI Compute Clusters

15:30-15:45 **Xianglei Dong,** Chengdu Sino Microelectronics Technology Co.,Ltd.
Title: Application of Domestic Ultra-High-Speed ADCs and DACs in oDSP"

15:45-16:00 **Bingtian Ye,** East China Normal University
Title: A 1.11pJ/b 224Gb/s XSR Receiver with Slice-Based CTLE and PI-Based Clock Generator in 12nm CMOS

16:00-16:15 **Tao Zeng,** CICT
Title: Real-Time FPGA DSP for Burst-Mode Coherent Reception, Ultrafast Polarization Tracking, and Distributed Fiber Sensing

Advanced opto-electronic and optical fiber packaging

Description:

OE packages for CPO, NPO, XPO, OIO, OCI, OCS and so on; Advanced 2.5D/3D packaging of PIC and EIC; Advanced optical fiber packaging and fiber assembly unit; Optical interposer and bridge; Micro and meta lens and packaging devices by silicon, silica, and so on;

Time: Sunday, 1 November 2026 | 8:30 a.m. – 11:30 a.m.
Venue: Conference Room 102A, 1F

Organizers:

Jiangbing Du, Shanghai Jiao Tong University
Xingjun Wang, Peking University
Wei Chu, Zhangjiang Laboratory
Yang Cheng, JCET Group Co., Ltd.
Shaoliang Yu, Zhejiang Lab
Linjie Zhou, Shanghai Jiao Tong University

Agenda:

Presider: **Jiangbing Du,** Shanghai Jiao Tong University

08:30-08:45 **Ting Lei,** Shenzhen Photonics Valley Technology
Title: Glass-based 3D Waveguides: A New Path for AI Optical Interconnection

08:45-09:00 **Li Geng,** HM Microelectronies Integration Technology Co., ltd
Title: CPO : Advanced Packaging Processes and Industrialization from Sample to Mass Production

09:00-09:15 **Erse Jia,** Zhangjiang Laboratory
Title: High-speed modulators and opto-electronic Co-Packaging Based on Advanced Silicon Photonics Platform

09:15-09:30 **Anjin Liu,** Institute of Semiconductors, Chinese Academy of Sciences
Title: VCSELs for optical interconnects in hybrid computing systems

09:30-09:45 **Pengfei Tian,** Fudan University
Title: Ultra-low-power high-speed micro-LED optical interconnects

09:45-10:00 **Xueyan Zheng,** Westlake Institute for Optoelectronics, Westlake University
Title: Optoelectronic Co-Packaging: Empowering AI

10:00-10:30 **Coffee Break**

Presider: **Ting Lei,** Shenzhen University

10:30-10:45 **Guangyong Chu, Yuechun Shi,** Yongjiang Laboratory
Title: Dynamic Simulation and Design of DFB semiconductor Lasers Using Transmission-Line Model

10:45-11:00 **Yuyao Guo,** Shanghai Jiao Tong University
Title: Multimaterial Photonic Packaging-Enabled Tunable Low-Noise Lasers and Their Applications

11:00-11:15 **Bin Zhang,** Zhejiang University
Title: Co-Design of High-Bandwidth Silicon Photonics Integration, Packaging, and Optical Interconnect Systems for Next-Generation AI Data Centers

11:15-11:30 **Zhimin Yu,** Peking University
Title: Interlayer-Free InP-on-SOI Bonding for III-V/Si Photonic Integration

Photonic Systems for AIDC: From Optical Fabrics to Computing and System Co-Design

Description:

The explosive scaling of large foundation models is pushing AIDC infrastructure beyond the limits of current statically-interconnected electrical network architectures. To support the future AIDC's scale-up, scale-out, and scale-across scenarios, photonics is moving toward xPU-facing optical interconnects, optical switching fabrics, and even optical computing acceleration. Emerging technologies such as high-density optical interfaces, next-generation interconnect architectures, OCS, programmable photonic fabrics, and photonic computing bring both tremendous opportunities and challenges as they step up on the central stage of AIDC.

This workshop focuses on key turning points and unresolved debates in AIDC photonic systems. It is organized in two sessions. The first session will explore how optical interconnects and switching fabrics can reshape AI infrastructure; and the second one will examine whether photonics can move toward computing and workload-aware system co-design. The workshop aims to bring together experts from photonics, AI systems, computing architecture, DC networking, and industry deployment to discuss technical feasibility, architectural trade-offs, commercialization challenges, and open ecosystems.

The key questions to address in session 1:

· GPU-facing optical interfaces and interconnect architectures: Beyond traditional paradigms, which emerging optical interface solutions and interconnect standards can best meet the power, cost, reliability, serviceability, and deployment requirements of future AI clusters?

· OCS and all-optical native AI infrastructure: Can OCS evolve from successful technical demonstrations into practical hyperscale deployment? What switching technologies (e.g., 3D MEMS, LCoS, silicon photonics), control mechanisms, and engineering solutions are needed for scale-up, scale-out, and scale-across AI infrastructures?

· Workload and traffic adaptation for optical fabrics: How should OCS and optically switched fabrics support large-model training and inference workflows? How can optical networks balance long-lived, high-bandwidth AI flows with short-packet, bursty interactive services?

The key questions to address in session 2:

· Interconnects vs. computing: Will photonics mainly serve as a high-performance data movement technology, or can optical computing approaches, such as photonic matrix–vector multiplication engines, realistically outperform or complement electronic AI accelerators?

· Software–hardware co-design: How can AI workloads, algorithms, photonic devices, optical switching fabrics, and system software be co-designed? Should AI algorithms adapt to photonic constraints, or should photonic systems evolve to fit existing computing paradigms?

· Open ecosystem, standards, and commercialization: What role should open software interfaces, orchestration frameworks, benchmarks, and standardization play in accelerating the adoption of photonic systems in AI data centers? How can the industry move from technical validation to scalable commercial deployment? Will ecosystem fragmentation or proprietary electronic alternatives (e.g., NVLink) delay the large-scale adoption of optical fabrics?

The panel aims to bring together speakers from optical networking, AI systems, photonic computing, hyperscale data centers, and standardization communities to discuss whether optical interconnects, optical switching, and optical computing will converge into a unified AI infrastructure, or evolve as competing technology paths.

Time: Sunday, 1 November 2026 | 1:30 p.m. – 5:30 p.m.
Venue: Multi-function Hall C, 1F

Organizers:

Yuyang Liu, China Telecom **Chair**
Xiao Lin, Fuzhou University **Co-Chair**
Massimo Tornatore, Politecnico di Milano **Co-Chair**
Wei Wang, Beijing University of Posts and Telecommunications **Co-Chair**

Agenda:

Presider: **Xiao Lin,** Fuzhou University
13:30-13:35 **Opening Remarks & Speaker Introductions**
13:35-13:55 **Yuyang Liu,** China Telecom Research Institute
Title: Optical Networks for AI Data Centers: Standardization Perspectives and Operator Practices
13:55-14:15 **Chongjin Xie,** PhotonicX AI
Title: High density NPO and CPO for scale-up optical interconnects

14:15-14:35 **Weiqiang Sun,** SJTU
Title: Bridging the Time-Scale Barrier: Atomic Optical-Digital Reconfiguration in AI Clusters via the AAOP Pattern
14:35-14:55 **Pan Cao,** HISILICON
Title: NPO: A Pragmatic Path to Future AI Scaling
14:55-15:15 **Nan Qi,** Institute of Semiconductor, CAS
Title: Codesign of Electronic and Photonic Circuits for Integrated high-BW and WDM Transceivers
15:15-15:40 **Coffee Break**

Presider: **Yuyang Liu,** China Telecom Research Institute
15:40-16:00 **Xuwei Xue,** BUPT, Philinks Tech
Title: Summary and Prospect of Optical-Switched AI Computing Centers
16:00-16:20 **Qiming Cao,** ZTE Corporation
Title: Routing in Reconfigurable Optical Circuit-Switched Networks for AI Computing
16:20-16:40 **Sisi Tan,** Huawei
Title: Emerging Optical Networking Technologies for AI Infrastructure
16:40-17:00 **Raul Muñoz,** CTTC
Title: From GPUs to Multi-Rail: How RDMA Shapes the Optical Network for Scale-Across AI
17:00-17:30 **Panel Discussion**

Silicon and Heterogeneously Integrated Photonics Towards Sub-pJ/bit, Multi-Tbps Optical I/O and Next-Generation AI Clusters

Description:

As AI/ML compute clusters scale toward hundreds of thousands of accelerators, inter-chip communication bandwidth is experiencing unprecedented exponential growth, pushing traditional copper-based electrical interconnects and conventional digital signal processing (DSP)-heavy optical transceivers to their physical limits in energy consumption, thermal dissipation, and edge density. To break through the looming "power wall" and "bandwidth density bottleneck," the optical communications industry is accelerating its paradigm shift from linear-drive pluggable optics (LPO) toward co-packaged optics (CPO) and near-chip, die-level Optical I/O. This workshop focuses on revolutionary architectural and device-level breakthroughs across material platforms, native on-chip sources, high-speed modulation, and zero-power static tuning, aiming to achieve multi-Tbps per waveguide physical-layer optical interconnects under a strict sub-1 pJ/bit energy budget. The technical scope mainly encompasses: high-yield integration of quantum-dot lasers and microcombs on standard silicon photonics foundries to eliminate external laser coupling losses; sub-volt, ultra-high-bandwidth thin-film lithium niobate (TFLN) modulators based on rings and photonic crystal nanobeam cavities to enable DSP-less host ASIC/SerDes direct drive; and monolithic back-end-of-line non-volatile phase-change material (PCM) integration for post-fabrication phase correction and static power elimination. By cascading active high-efficiency devices with passive multi-dimensional multiplexing, this symposium will bridge pioneering micro-and-nanophotonics physics with commercial foundry mass-producibility, mapping out the definitive energy-efficient, high-throughput all-optical networking infrastructure.

Time: Sunday, 1 November 2026 | 1:30 p.m. – 5:45 p.m.
Venue: Conference Room 102A,1F

Organizers:

Jiawei Wang, Harbin Institute of Technology (Shenzhen)
Yu Li, Shanghai Jiao Tong University
Zhanshi Yao, Huawei Technologies Co., Ltd.
Kaiyi Wu, Harbin Institute of Technology

Agenda:

Presider: **Jiawei Wang,** Harbin Institute of Technology (Shenzhen)
13:30-14:00 **Jianfeng Wang,** Huawei Technologies Co., Ltd
Title: Requirements for Heterogeneous Integration in Optical Communications in the AI Era
14:00-14:30 **Kelaiti Xiao,** Shanghai Institute of Microsystem and Information Technology Chinese Academy of Sciences
Title: Advanced packaging technologies used in Co-packaged Optic
14:30-15:00 **Zekun Niu,** Shanghai Jiao Tong University
Title: Agentic PIC Design and Simulation Acceleration
15:00-15:30 **Shiyang Zhu,** Shenzhen Polytechnic University
Title: Hybrid Integration of Standard Silicon Photonics Process and Various Backend Process
15:30-15:45 **Coffee Break**

Presider: **Yu Li,** Shanghai Jiao Tong University
15:45-16:15 **Yu Zhang,** Huazhong University of Science and Technology
Title: Towards Sub-pJ/bit Optical I/O using Advanced Packaging and Heterogeneous Integrated Photonic Devices
16:15-16:45 **Shikui Shen,** China Unicom Research Institute
Title: Recent advances in Optical Frequency Combs and applications in optical communications
16:45-17:15 **Junyin Zhang,** École Polytechnique Fédérale de Lausanne
Title: Recent Advances in Thin-Film Lithium Tantalate Integrated Photonics
17:15-17:45 **Xiaomeng Zhao,** Shanghai Novel Si Integration Technology Co., Ltd
Title: Fabrication and Integration Technologies for Monocrystal Thin-Film Lithium Niobate

Path to Very High Speed PON: Requirements, Components, and Solutions

Description:

The passive optical network has been the workhorse of broadband access for four decades, evolving from A/B-PON through G-PON, XG(S)-PON, and now 50G-PON. With 50G-PON being standardized in ITU-T G.9804, the industry is paying attention to Very High Speed PON (VHSP). The first VHSP Supplement, ITU-T G Suppl. 88, was agreed by ITU-T in October 2025, describing potential system requirements and candidate technologies for PON systems above 50 Gbit/s per wavelength, including general architecture, system requirements, and candidate VHSP technologies. ITU-T is continuing to evaluate candidate technologies for next-generation PON systems, with Q2/15 actively updating modulation formats and single-wavelength transceiver configurations for VHSP. This provides the background and starting point for the workshop.

However, the path from 50G-PON to VHSP is far from settled, and the central open question is technology path selection. The workshop will examine these open issues through several intertwined dimensions: VHSP requirements and standardization status; rate targets such as 100 Gb/s and 200 Gb/s, and technology choices among IM-DD, coherent detection, and hybrid alternatives; and wavelength plans including O-band, E-band, and C-band, together with coexistence scenarios with GPON, XGS-PON, and 50G-PON. The discussion will span requirements, standardization, component maturity, and system architecture without presupposing specific technical conclusions.

This workshop will bring together proponents of hybrid, IMDD-only, and coherent-only solutions to create a lively and technically substantive debate. Rather than surveying broad trends, the discussion will focus on the critical decisions (i.e., requirements, standardization, component readiness, and architecture) that will shape VHSP over the next 2–3 years. Through invited talks and panel discussions, the workshop aims to foster dialogue among different technology paths and provide a platform for exchange across VHSP research, standardization, and industrial deployment.

Time: Sunday, 1 November 2026 | 1:30 p.m. – 5:15 p.m.
Venue: Conference Room 102B, 1F

Organizers:

Yixiao Zhu, Shanghai Jiao Tong University
Shikui Shen, China Unicom
Luyao Huang, China Telecom Research Institute
Zhaopeng Xu, Pengcheng Laboratory

Agenda:

Part I

13:30-13:45 **Yanzhao Lu,** Huawei
Title: Next-Generation AI-Native PON Evolution Beyond 50G
13:45-14:00 **Yanni Ou,** Beijing University of Posts and Telecommunications
Title: Coding and DSP for Very High-speed Flexible PONs
14:00-14:15 **Junwen Zhang,** Fudan University
Title: Next-Generation High-Speed and Flexible Optical Access Network based on Coherent Optics
14:15-14:30 **Jinlong Wei,** Pengcheng Laboratory
Title: Enabling Optical Access Network for Time Sensitive Applications
14:30-14:45 **Guoqiang Li,** ZTE
Title: Direct-Detection Technologies for Very High Speed PON: DCPC, ODB and SSB

Part II

15:15-15:30 **Xiang Li,** China University of Geosciences
Title: Beyond Bandwidth: Integrated Sensing and Communication in PONs
15:30-15:45 **Bin Chen,** Hefei University of Technology
Title: FEC for Very High Speed PON: From Requirements to Solutions
15:45-16:00 **Dayu Shi,** Westlake Univeserity
Title: Self-Coherent Detection: A Practical Path to 200G PON
16:00-16:15 **Ning Wang,** China Mobile Research Institute
Title: Candidate technologies for 200G PON enabling next generation broadband network
16:15-16:30 **Dezhi Zhang,** China Telecom Research Institute
Title: Development and Evolution of VHSP

Part III

16:45-17:15 **Panel Discussion**

Next Generation AI Optical Interconnects

Description:

AI datacenters are growing at an unprecedented pace and photonics will play a key role in scaling to ever higher computational powers. This workshop will provide a comprehensive technical deep dive into how innovative photonics solutions can increase performance, energy-efficiency and scalability. The first part of the workshop will take a deep look into the evolution of standards for AI-datacenter networks, novel integrated photonic concepts for transceivers and switches as well as next generation pluggable transceivers. In the second part a comprehensive technical deep dive into the Optical Compute Interconnect (OCI) Multi-Source Agreement (MSA), the emerging open standard designed to break the copper barrier in AI scale-up architectures will be given and implementation pathways will be explored.

Time: Sunday, 1 November 2026 | 1:30 p.m. – 5:15 p.m.
Venue: Conference Room 206, 2F

Organizers:

Stephan Pachnicke, Kiel University, Germany
Vivian Chen, Nokia Bell Labs, USA
Ting Wang, Shanghai Jiao Tong University, China

Agenda:

Session 1: Intra-Datacenter Communications and the Role of Photonics in Future AI Datacenter Networks- Presider: Stephan Pachnicke

13:30-13:45 **Xiang Liu,** Huawei
Title: Overview of Optical Standardization on FPO/XPO/NPO/OCS for AI-Datacenter Networks
13:45-14:00 **Son Thai Le,** Ciena
Title: Silicon-Photonics Optics Engines for AI Datacenters
14:00-14:15 **Jose Capmany,** iPRONICS / UPV
Title: The Role of Programmable Photonics for Future AI Datacenters
14:15-14:30 **Jim Zou,** Adtran
Title: Pluggable Optics for the Evolving Needs of the AI Supercycle
14:30-14:45 **Dmitrii Briantcev,** Trinity College Dublin
Title: Future AI Fabrics: What Role will Optics Play?
14:45-15:00 **Magnus Fischer,** Kiel University
Title: Will Electrical or Optical BiDi Systems Reshape Future Scale-Up Networks?
15:00-15:30 **Coffee Break**

Session 2: OCI Standards and Implementation Pathways – Presider: Ting Wang

15:30-15:45 **Nan Qi,** LuxSilicon
Title: Micro-ring based OCI-Compatible WDM Transceivers with D2D Interface for AI Scale-up
15:45-16:00 **Liangjun Lu,** Photonic Nexus
Title: Heterogeneous Photonic Integrated Circuits for High-Performance Communication
16:00-16:15 **Hai Hu,** Polarox
Title: Polariton High Speed Modulator based Optical Interconnection
16:15-16:30 **Shujie Pan,** HS Photonics
Title: III-V QD comb for next generation CPO/OIO
16:30-16:45 **Xinlun Cai,** Niobate
Title: TFLN photonic integrated circuits for optical interconnects
16:45-17:15 **Panel Discussion**

Programmable photonics and applications

Description:

As integrated photonic technology matures, programmable photonic circuits are ushering in a new era of flexibility and versatility. Such programmability stems from precisely tunable photonic building blocks, such as thermo-optic and electro-optic phase shifters. Leveraging multiple optical degrees of freedom to enable parallel processing, these structures reshape optical amplitude and phase responses in situ to synthesize arbitrary spectral functions, eliminating the need for hardware re-fabrication. This workshop brings together leading researchers to discuss the state-of-the-art in programmable photonics and its applications, including optical switching for high-density networking in next-generation AI-driven data centers and optical computing architectures that leverage light for ultra-fast matrix operations, neuromorphic processing and physics-inspired computing. Furthermore, we will explore the potential of programmable photonics for on-chip signal processing and optical sensing. This workshop offers an unparalleled opportunity to connect, share breakthroughs, and shape the future of programmable photonics.

Time: Sunday,1 November 2026 | 8:45 a.m. – 4:30 p.m.
Venue: Multi-function Hall A, 1F

Organizers:

Daoxin Dai, Zhejiang University & China Jiliang University
Yikai Su, Shanghai Jiao Tong University
Hon-Ki Tsang, Chinese University of Hong Kong
Siyuan Yu, Sun Yat-sen University

Agenda:

09:00–09:15 **Hanke Feng,** City University of Hong Kong
09:15–09:30 **Qisheng Yang,** Hunan University / PhotonCore (Beijing) Technology Co., Ltd.
09:30–09:45 **Yiwei Xie,** Zhejiang University
09:45–10:00 **Xuhan Guo,** Shanghai Jiao Tong University
10:00–10:10 **Coffee Break**

10:10–10:25 **Zhituo Chen,** Zhejiang University / Xinzhi Chenguang Technology (Hangzhou) Co., Ltd.
10:25–10:40 **Hongtao Lin,** Zhejiang University
10:40–10:55 **Yaojing Zhang,** The Chinese University of Hong Kong, Shenzhen
10:55–11:10 **Tingbiao Guo,** Zhejiang University
11:10–12:00 **Panel Discussion**
12:00–13:30 **Lunch**

13:30–13:45 **Yunhong Ding,** SiPhotonIC ApS, Technical University of Denmark
13:45–14:00 **Dajian Liu,** ZJU-Hangzhou Global Scientific and Technological Innovation Center
14:00–14:15 **Dongxu Zhang,** Beijing Philinks Technology Co. Ltd.
14:15–14:30 **Jiaxing Dong,** Beeplux Semiconductor
14:30–14:45 **Wei Gao,** PhotonNex Technology Co., Ltd., Shanghai Jiao Tong University
14:45–15:00 **Huan Li,** Zhejiang University
15:00–15:20 **Coffee Break**

15:20–15:35 **Yuanfei Zhang,** Southeast University
15:35–15:50 **Yeyu Tong,** Hong Kong University of Science and Technology (Guangzhou)
15:50–16:05 **Jie Liu,** Sun Yat-sen University
16:05–16:20 **Yuanhui Wen,** Sun Yat-sen University
16:20–16:50 **Panel**

Optical Satellite Networking and In-Orbit Computing: Towards Integrated Space Communication and Computing

Description:

The rapid deployment of large-scale satellite constellations, together with advances in laser communications and spaceborne computing, is transforming satellite systems from traditional communication platforms into highly connected and computing-enabled space infrastructures. High-capacity optical inter-satellite links can provide hundreds of gigabits per second or even terabit-class connectivity, while emerging in-orbit computing platforms enable data processing, storage, AI inference, and service execution directly in space.

The convergence of optical networking and in-orbit computing also introduces new technical challenges. Satellite mobility leads to highly dynamic topologies, intermittent connectivity, and time-varying link conditions, making routing, traffic engineering, resource allocation, resilience, and network control fundamentally different from terrestrial networks. Meanwhile, in-orbit computing is constrained by limited power, processing capacity, storage, and thermal resources. Efficient coordination of communication, computing, and storage resources is therefore essential.

This workshop aims to bring together researchers, engineers, satellite operators, equipment vendors, cloud and computing providers, and standardization communities to discuss recent advances and future directions in optical satellite networking and in-orbit computing. Particular attention will be given to the integration of high-speed optical connectivity, dynamic networking, distributed computing, artificial intelligence, and autonomous network operation. Topics of interest include optical inter-satellite and satellite-to-ground networking; optical transport architectures for satellite constellations; dynamic routing and traffic engineering; resilient and survivable networking; in-orbit computing architectures; distributed AI inference and edge computing in space; computing-aware routing; AI-assisted network management; experimental platforms and in-orbit demonstrations; and emerging standards and applications.

Time: Sunday, 1 November 2026 | 1:50 p.m. – 5:30 p.m.
Venue: Multi-function Hall B, 1F

Organizers:

Yongli Zhao, Beijing University of Posts and Telecommunications
Kangning Li, China Satellite Network Group Co., Ltd.
Yunbo Li, China Mobile Research Institute
Yuping Wu, Huawei Technologies Co., Ltd.

Agenda:

Session I

Presider: **Yongli Zhao,** Beijing University of Posts and Telecommunications

13:50-14:00 **Opening Remarks**
14:00-14:20 **Fang Li,** CAICT
Title: Collaborative promotion of satellite optical communication technology standards and industrial scale development
14:20-14:40 **Buzheng Wei,** China Unicom
Title: Thoughts on Wireless Optical Communication in Ground and Low-Altitude Multi-Scenario Applications
14:40-15:00 **Xiao Ma,** BUPT
Title: Tiansuan Constellation: Research and Practice on Satellite Computing
15:00-15:20 **Jiang Tang,** Huawei
Title: Technological Trends and Challenges of Space Optical Network for the AI Era

Session II

Presider: **Yuping Wu**, Huawei Technologies Co., Ltd.

15:40-16:00 **Yunbo Li,** China Mobile
Title: Towards Standard-Compatible Adaptive Framing for LEO Inter-Satellite Laser Links: An Exploratory Study of Ephemeris-Embedded OTN
16:00-16:20 **Kanglian Zhao,** Nanjing University
Title: Resilient Optical Feeder Link Networking for LEO Constellations
16:20-16:40 **Wenbo Yu,** ZTE
Title: Prospect of Broadband Satellite Laser Communication Technology
16:40-17:00 **Changzheng Zhou,** Blue Star Optics
Title: Development Status and Future Prospects of Optical Inter-Satellite Links in LEO Satellite Constellations

Presider: **Yunbo Li,** China Mobile

17:00-17:30 **Panel Discussion**

POC Workshop on Trends in Optoelectronics and Communications

Description:

Progress in Optoelectronics and Communications (POC) covers cutting-edge research and innovations across the entire ecosystem of light-based telecommunications. This includes optoelectronic devices (lasers, modulators, detectors, PICs), transmission technologies (advanced modulation, DSP, fiber/wireless integration), and network architectures (core/metro/access networks, 5G/6G fronthaul, data center interconnects). The journal emphasizes high-speed systems (terabit-class), coherent optics, SDN/NFV control, and emerging paradigms like quantum communications, integrated sensing-communication (ISAC), and AI-optimized networks. It addresses challenges in capacity, latency, energy efficiency, and scalability—from component design to field deployment—enabling next generation secure, ultra-low latency global connectivity.

Time: Sunday, 1 November 2026 | 2:00 p.m. – 5:30 p.m.
Venue: Conference Room 102C, 1F

Organizers:

POC Journal
Wuhan Research Institute of Post & Telecommunications Co., Ltd (WRI)
Chinese Optical Society (COS)
Westlake University
State Key Laboratory of Optical Communication Technologies and Networks (OCTN)

Chair:

William Shieh, Westlake University

Agenda:

Presider: **William Shieh,** Westlake University
14:00-14:20 **Lianshan Yan,** Southwest Jiaotong University, China
Title: Photonic integration of sensing and communication
14:20-14:40 **Jinshi Xu,** University of Science and Technology of China, China
Title: Identifying Single Oxygen-vacancy centers in 4H-SiC
14:40-15:00 **Jian Wang,** Huazhong University of Science and Technology, China
Title: Tailoring Light with Photonic Integrated Devices and Its Applications
15:00-15:20 **Xiaonan Xu and Haoshuo Chen,** Nokia Bell Labs, USA
Title: Adaptive AI over Optical Networks
15:20-15:40 **Coffee Break**

15:40-16:00 **Isidora Teofilovic and Francesco Da Ros,** Technical University of Denmark (DTU), Denmark
Title: Physics-informed data-driven modeling of thermal crosstalk in interferometer meshes
16:00-16:20 **Lena Wosinska,** Chalmers University of Technology, Sweden
Title: Evolution of Optical Solutions to Support Fixed and Mobile Broadband Access Networks
16:20-17:30 **POC Editor Meeting**

Industry Forum

All-Optical Network in the Intelligent Era

Description:

In the AI Era, optical networks need to be upgraded to ION-2030, this includes AIDC, AI-OTN and AI-FAN solutions, which support to build all-optical networks and realize the vision of "Network for AI", while introducing AI capabilities into devices to implement "AI for Network" .

Session1: AIDC

Session 1 of this industry forum explores AI-driven data centers (AI-DCs), the cornerstone of next-generation intelligent applications amid rapid advances in AI and digital transformation. It provides a global platform for in-depth discussion between academia and industry, focusing on cutting-edge trends and practical challenges in the AI-DC domain. OCS enables flexible, efficient optical-layer scheduling, while hollow-core fibers — with their ultra-low latency and nonlinear suppression — are pushing the boundaries of transmission. These topics will be explored in this session.

Time: 1 November2026 | 9:00 a.m. – 12:00 p.m.
Venue: Conference Room 101, 1F

Organizers:

Hongchen Yu, Huawei Technologies Co., Ltd

Xuwei Xue, Beijing University of Posts and Telecommunications

Agenda:

09:00-09:10 **Opening** **Shanguo Huang,** Beijing University of Posts and Telecommunications / **Zhicheng Ye,** Huawei Technologies Co., Ltd

09:10-09:30 **Dong Wang,** China Mobile Research Institute
Title: Evolution and Outlook of Intelligent Computing and Optical Network Technologies in the AI Era

09:30-09:50 **Huangxu Ma,** Kuaishou
Title: Optical Interconnect Technology: Applications and Prospects in Intelligent Computing Networks

09:50-10:10 **Dejiang Zhang,** Huawei Technologies Co., Ltd
Title: AIDC Optical Network Technology Evolution Trend

10:10-10:30 **Coffee Break**

10:30-10:50 **Jiawei Zhang,** Beijing University of Posts and Telecommunications
Title: Optical Networks for AI: the Challenge and Optimization for LLM Training across Datacenters

10:50-11:10 **Dongxu Zhang,** Beijing Philinks Tech Co., Ltd.
Title: All-Optical Switching Technologies for AI Computing Clusters

11:10-11:30 **Yu Li,** Shanghai Jiao Tong University
Title: Ge-on-Si Photodetectors for NPO and CPO: Receiver Requirements and Device Design

11:30-12:00 **Panel**

Session2: AI-FAN

Looking toward ION-2030, we will accelerate the large-scale commercial deployment of 50G PON for 10-gigabit broadband, explore key architectures and technologies enabling end-edge-cloud collaboration and compute-network integration, and innovatively evolve AI-FAN to build the next-generation access network foundation, which will empower operators to transition from bandwidth-centric operations to token-centric operations, jointly opening up new opportunities in optical access.

Time: 1 November 2026 | 2:00 p.m. – 5:50 p.m.
Venue: Conference Room 101, 1F

Organizers:

Enyu Zhou, Huawei Technologies Co., Ltd

Borui Li, Huawei Technologies Co., Ltd

Agenda:

14:00-14:10 **Opening** **Zhicheng Ye,** Huawei Technologies Co., Ltd
14:10-14:30 **Dezhi Zhang,** China Telecom Research Institute
Title: Evolution of Next-Generation Intelligent Optical Access Networks
14:30-14:50 **Yan Shao,** China Unicom Research Institute
Title: Discussion on the Evolution of Optical Access Network Technology in the AI+ Era
14:50-15:10 **Ning Wang,** China Mobile Research Institute
Title: Technical progress on AI integrated optical broadband networks
15:10-15:30 **Zongzhao Zheng,** Huawei Technologies Co., Ltd
Title: AI-FAN: Building Optical Access Solutions for the AI Era, Inspiring Unlimited Innovation Opportunities
15:30-16:00 **Coffee Break**

16:00-16:20 **Dajian Liu,** Zhejiang University
Title: Advances in Silicon Photonics for Passive Optical Networks
16:20-16:40 **Junwen Zhang,** Fudan University
Title: Intelligent Optical Access toward Compute-Network Convergence for the AI Era
16:40-17:00 **Richeng Jin,** Zhejiang University
Title: Privacy-preserving distributed computation with device-edge collaboration
17:00-17:20 **Ji Zhou,** Beijing Institute of Technology (Zhuhai)
Title: High-speed home optical access network based on plastic optical fibers
17:20-17:50 **Panel**

Industry Horizon program

Description:

Generally speaking, Industry Horizon encompasses current trends, forecasts, and challenges across various industrial sectors, influenced by economic conditions, technological advancements, and geopolitical factors. To be more specific, with the wider impact of AI on networking and service provider infrastructure, this program is tailored to provide valuable insights into the innovations, opportunities, and challenges shaping the future of global connectivity, compute and networking for our industry.

The 2026 Industry Horizon program target a full day series of panel discussions highlighting the latest application topics and business issues in the field of optical communications. Presentations and panel sessions feature esteemed guest speakers from industry, academic and the investment community.

We will explore and share insights into emerging technologies, standards, and manufacturing / deployment challenges, alongside look into the future direction of optical solutions and examine how the industry is scaling to meet growing AI demands, with topics such like scale-up, scale-out and scale across architectures, CPO/NPO/XPO, uLED, silicon photonics & TFLN, photonics packaging, laser innovation, and the evolution beyond 1.6T connectivity etc.

ACP 2026 Industry Horizon program

Market update and outlook on optical PON access and wireless fronthall & last-mile transport

Session Description:

Passive Optical Networking (PON) continues to evolve rapidly, with operators around the world transitioning from GPON to XGS-PON while evaluating 25G, 50G, and other next-generation technologies. Besides, PON expands into the Data Center: PON is breaking out of purely residential broadband. Hyperscalers, colocation facilities, and enterprise campuses are increasingly deploying Passive Optical LAN (POL) solutions for secure, low-latency out-of-band infrastructure management and network architecture. Data center spending on PON equipment is projected to grow at a 52% CAGR through 2030.

Currently PON access and wireless fronthaul markets are entering a strong growth phase in 2026, driven by FTTH expansion, 5G transport demand, and next-gen optical technologies, with global PON equipment valued at ~USD 38.7 B in 2026 and projected to reach USD 61.5 B by 2031. 5G Fronthaul and Backhaul transport market is valued at $7.44 billion and is on a steep multi-year trajectory to reach over $34 billion by 2030, mirroring the transition to 5G Advanced and Cloud RAN architectures.

This industrial session provides an industry reality check on current PON, wireless FH & last-mile transport deployments, upgrade strategies, and emerging applications, as well as the key technical and operational challenges operators are facing. Industry experts will share insights on adoption trends, coexistence approaches, real-world use cases, and the roadmap toward multi-gig services and future access architectures.

Keywords: FTTH, PON, wireless fronthaul, last-mile transport

Time: Sunday, 1 November 2026 | 9:00 a.m. – 12:00 p.m.
Venue: Conference Room 205, 2F

Organisers:

Hua Zhang, Ligent
Scott Xin Yin, IMEC
Frank Chang, Source Photonics

Speakers:

Na Wu, ICCSZ, China
Meng Gao, Huawei, China
Cathy Sun, ZTE, China
Jim Zou, Adtran Networks, USA
Xiaoheng Lin, UXIC, China
Break for 10min

Ning Wang, China Mobile, China
Qiongxia Shen, FiberHome, China
Dezhi Zhang, China Telecom Research Institute, China
Frank Chang, Source Photonics, USA

Industry debate: OCS or not OCS?

Session Description:

As AI clusters scale to tens of thousands of accelerators, conventional electrical packet switching faces bandwidth, power, latency, and reconfiguration limits. Optical Circuit Switching (OCS) builds reconfigurable light paths with minimal O-E-O conversion, enabling software-defined topology, protocol/rate transparency, lower latency, and lower power.

At OFC 2026, Google reported multi-generation OCS with TPU pods while NVIDIA outlined OCS possible for scale-up, scale-out, and cross-site AI fabrics. OCS target to complement (not replace), electrical cuicirt switches: it suits predictable training/elephant flows, spine reconfiguration, fault isolation, and cross-campus scheduling, while random low-latency traffic still needs packet switches. Open issues remain - SDN/control-plane integration, TCO validation, millisecond switching speed, insertion loss, and vendor interoperability.

This forum debates when OCS is mandatory, when hybrid electrical-optical designs win, and how standards, MEMS, piezoelectric ceramic, liquid-crystal, and silicon-photonics roadmaps and operator use case studies can de-risk industrial adoption.

Keywords: OCS, MEMS, Switches, Data Center Interconnect

Time: Sunday, 1 November 2026 | 1:30 p.m. – 5:00 p.m.
Venue: Conference Room 205, 2F

Organisers:

Frank Chang, Source Photonics
Xiang Zhou, Google
Hua Zhang, LUSTER, China

Speakers:

1H Session Moderator: **Frank Chang**

13:30-13:45 **Mark Lutkowitz,** FibeReality LLC, USA
Title: Widespread Scaling Versus Dominant Single User of OCS

13:45-14:00 **Bo Xiong,** Zhejiang University, China
Title: Optical Switching Based on Silicon Photonics and Its Post-Fabrication Trimming

14:00-14:15 **Ning Deng,** Great Bay University, China
Title: Opportunities and Challenges of OCS for AI Computing: Network Resilience and Link Performance

14:15-14:30 **William Chen,** Managing Director at OneTouch, Belgium
Title: Discussion on Ultrafast OCS Based on Silicon Photonics Heterogeneous Integration Platform

14:30-14:45 **Hua Zhang,** LUSTER, China
Title: Optical Switching Technology and Application for AI Reconfigurable Data Center Network (RDCN)

14:45-15:00 **Coffee Break**

2H Session Moderator: **Hua Zhang**

15:00-15:15 **Fanmiao Kong,** Huawei, China
Title: OCS Solutions for AI Cluster Applications

15:15-15:30 **Guangpeng Ma,** Lumentum, China
Title: OCS Technology and Application Update

15:30-15:45 **José Capmany,** iPronics, Spain
Title: The Role of Programmable Photonics for Future AI Datacenters

15:45-16:00 **Chonghuai Ma,** Beeplux Semiconductor, China
Title: High-Port-Density Silicon Photonic OCS: Next-Generation Optical Switching for AI Computing Supernodes

16:00-16:15 **Jun Wei,** NexPhoton, China
Title: Highly Scalable Non-Blocking OCS: Nexphoton NP-Series Optical Circuit Switch for AI Datacenters

16:15-17:00 **Panel Discussion**

Realistic check of AI interconnect scaling solutions for post 1.6T era

Session Description:

With AI DC build out for 2026, rapid deployment of 800G is happening with close to 100M ports annually, while 1.6T is emerging soon as clear roadmap to reach prime time in next 2-3 years. The next era of networking is here for post 1.6Tb/s. In order to sustain the AI and cloud-driven bandwidth surge, the industry enters into another crossroad again with many MSA solutions available, similar to the last situation with transition to 100Gb/s for 10 year ago. From industry perspective, while CPO is commonly considered as a long-term enabler, many other solutions like NPO, CPX, XPO, 300/400G per lane, high-order modulation & Coherent lite are proposed. In this session, we will provide an overview of various development status/readiness, and discuss these high capacity/high density optical solutions per use cases for how to meet AI scaling requirements in supporting AI scale up, scale out and scale across.

More specially, the next revolution in AI computing clusters has been driven by scale up (for vertical scaling) as botleneck to enhance single-node performance such like "Super nodes". As we race toward 1.6T and beyond, it pushes network infrastructure to its fundamental limits of physical electrical interconnects, so a new paradigm is emerging for post 1.6T sotions:: a fundamental shift in how industry design network hardwares beyond pluggable optics transceivers.

The workshop will focus on hyperscale end user case studies, design/package challenges, implementation & commercialization. Looking beyond today's SuperPods, the path toward increasingly large and tightly connected "Hyper Pods," become prevailing with optics enabling next level of system scale and integration. The workshop will bring together hyperscalers, CSP end users, switch integrators, and technology innovative vendors to exchange technology and market intelligence and help align future products, roadmaps, and supply chains around the next generation of AI computing.

Keywords: Scale up, 1.6T, optical transceivers, Switches, Data Center Interconnect

Time: Monday, 2 November 2026 | 1:30 p.m. – 5:00 p.m.
Venue: Conference Room 205, 2F

Organisers:

Scott Wilkinson, Cignal AI
Frank Chang, Source Photonics
Guangcan Mi, Huawei

Speakers:

Mark Lutkowitz, fibeReality, LLC, USA
Eric Berner, Huawei, Canada
Chongjin Xie, PhotonicX AI, Singapore
Marcus Yang, SiPhi, USA
Samuel Liu, Lumilens, USA
Kang Hou, Hisilicon, China
Break for 15min

Minqing Zuo, China Mobile, China
Anbin Wang, Alibaba, China
Die Wan, Baidu, China
Bruce Chow, Coherent, USA (TBD)
Son Thai Le, Ciena, USA
Xiang Liu, Huawei, Hong Kong, China

ACP 2026 Special Symposium

(within the Industry Horizon Program)

ION-2030 for AI Data Centers: From Scale-Up to Scale-Out, Scale-Across, and Distributed Intelligence

Session Description:

The International Telecommunication Union (ITU) has established a new strategic framework, International Optical Networks Towards 2030 and Beyond (ION-2030), to guide the evolution of global optical connectivity in the era of artificial intelligence (AI). ION-2030 presents a strategic vision for how optical networks should evolve to meet the emerging requirements of AI, data centers, broadband access, home networking, and IMT-2030/6G mobile networks. The framework emphasizes the mutual empowerment of AI and optical networking, positioning them as complementary drivers of the next wave of digital transformation and ubiquitous intelligence.

This Special Symposium will bring together experts at ACP 2026 to present and discuss advances in ION-2030 technologies and architectures for AI data centers, with particular emphasis on the following four dimensions:

- Scale-up: Ultra-high-bandwidth and ultra-low-latency connectivity among accelerators, memory, storage, and network interfaces within AI supernodes;
- Scale-out: Scalable interconnection among racks, pods, and accelerator clusters within a data center or campus;
- Scale-across: Deterministic, high-capacity connectivity among geographically distributed AI data centers operating as a unified computing infrastructure; and
- Distributed intelligence: Coordinated AI inference, training, data processing, and resource orchestration across centralized, regional, edge, enterprise, and user-premises computing facilities with a supporting optical network fabric.

Optical technologies will play a critical role across all four dimensions, and the ION-2030 Special Symposium will address key topics including:

- Co-packaged optics (CPO), near-packaged optics (NPO), eXtra-dense pluggable optics (XPO), linear pluggable optics (LPO), and high-density interconnects;
- Optical circuit switching (OCS) for AI supernodes, scale-out fabrics, and multi-data-center connectivity;
- 400G, 800G, 1.6T, Beyond-1-Terabit OTN, flexible-grid, full-spectrum transponder (FST), and multi-rail transmission;
- Deterministic latency, low jitter, lossless or near-lossless transport, and telecom-grade protection and restoration;
- Distributed training, collaborative inference, agentic AI, embodied AI, and edge intelligence;
- AI-ready data-center access, metro computing networks, and one-hop connectivity to edge and regional AI data centers;
- Energy-efficient architectures, sustainability, resilience, security, data sovereignty, and assured service-level agreements; and
- Standards, deployment experience, technology roadmaps, and emerging business opportunities.

The symposium will bring together experts from network and cloud operators, AI data-center providers, equipment and component manufacturers, standards organizations, universities, and research institutes. Through invited presentations and forward-looking discussions, participants will examine how advances across devices, systems, networks, computing architectures, and intelligent control can be brought together to build scalable, sustainable, secure and resilient AI infrastructure.

We warmly invite the ACP community and professionals across the AI, data-center, and optical-networking ecosystems to join this timely discussion and help shape the evolution of ION-2030 for AI data centers - from scale-up and scale-out to scale-across and truly distributed intelligence.

Time: Tuesday, 3 November 2026 | 8:30 a.m.–12:00 p.m.
Venue: Conference Room 205, 2F

Moderators:

Shikui Shen, China Unicom, China

Xiang Liu, Hong Kong Research Center of Huawei, Hong Kong, China

Agenda:

Session 1: 8:30 a.m.–10:00 a.m.

1. **Glenn Parsons,** Ericsson, Canada (ITU-T SG15 Chair)
"ITU-T SG15's Vision and Work Programs for the AI Era"
2. **Raul Muñoz**, Centre Tecnològic de Telecomunicacions de Catalunya (CTTC), Spain
"ION-2030 for Distributed AI Training and Inference"
3. **Nicola Calabretta**, Eindhoven University of Technology, Netherlands
"Optical Circuit Switching (OCS) for Energy-Efficient AI Data Centers"
4. **Yuyang Liu**, China Telecom, China
"Metro Optical Networks Rearchitected as Computing Power Interconnect for Edge-AI"
5. **Mingqing Zuo**, China Mobile, China
"An Operator's Perspective on the Evolution towards AI-OTN"
6. **Gabriele di Rosa**, Adtran Networks SE, Germany
"Optical Technologies for 1.6Tb/s Coherent Pluggable Modules"
–Panel Discussion and Q&A of Session 1

Coffee break: 10:00 a.m.–10:30 a.m.

Session 2: 10:30 a.m.–12:00 p.m.

7. **Frank Chang**, Source Photonics, USA
"1.6Tb/s Optical Modules for AI Data Center Scale-Out"
8. **Son T. Le**, Ciena Corporation, United States
"Optical Technologies for AI Data Center Scale-Up"
9. **Qin Chen**, Alibaba, China
"CPO and NPO for Hyper-Scale AI Data Centers"
10. **Sidong Fu**, Tencent, China
"NPO and XPO for AI Data Centers"
11. **Sisi Tan**, Huawei, China
"Full-Spectrum Transponder Innovations for AI Data Center Scale-Across"
–Panel Discussion and Q&A of Session 2

Presented By:

Exploring slow & wide approach using µLEDs and µVCSEL for AI scale up networks

Session Description:

Optical I/O (OIO) interconnect technology aims to address power and bandwidth bottlenecks in AI computing clusters for Chip-to-Chip (C2C) and Device-to-Device (D2D) scenarios through a "high-parallelism, low-single-channel-rate" architecture. Regarding transmitter selection, Microring modulator (MRMs) are the mainstream solution in OCI-MSA due to their miniaturization, CMOS compatibility, and support for high-speed single-channel and WDM expansion.

However, since MRMs require independent DFB lasers, direct modulation schemes using MicroLEDs (uLEDs) and MicroVCSELs (uVCSELs) offer potential for further cost and power reduction. uLEDs exhibit superior thermal stability but suffer from low single-channel bandwidth (1–4 Gbps) and complex coupling processes, necessitating breakthroughs in single-channel rates or the design of low-power Gearboxes to adapt to switch interfaces. In contrast, uVCSELs provide higher bandwidth, yet the yield of high-density arrays and the maturity of Fiber Array Units (FAUs) remain to be validated.

To achieve extreme low power consumption, OIO technology must evolve toward a Serdes-less and Gearbox-less form, facing challenges in architecture compatibility, performance, packaging/coupling processes, and multi-channel reliability. This requires restructuring the switch architecture, including supporting I/O Die direct drive for low-speed parallel channels, adjusting Small IO bandwidth (4G–64G), and adopting control-data separation scheme. Furthermore, when using low-cost light sources, receiver performance must be enhanced via high-sensitivity Photodiodes (PDs) and low-noise CMOS TIAs. As parallelism increases, novel packaging solutions like 2.5D TMV and 3D TSV must be developed to integrate high-density optoelectronic devices with chips, while precise coupling with various fiber types remains an engineering challenge. Finally, thermal risks must be addressed, and redundancy designs implemented to mitigate reliability risks arising from engineering fluctuations.

Keywords: Switch, OIO, MRM, uLED, uVCSEL, Data Center Interconnect

Time: Tuesday, 3 November 2026 | 1:30 p.m. – 5:00 p.m.
Venue: Conference Room 205, 2F

Organisers:

Ye Yao, Huawei Hisilicon
Gordon Ning Liu, Soochow University
Frank Chang, Source Photonics

Speakers:

Mark Lutkowitz, fibeReality, LLC, USA
Bao Yun, Alibaba, China
Fuwan Gan, Silux Technologies, China
Zhenhao Li, Beijing Sparkle Opto Tech Co, China
Xin Chen, Corning, USA
Haiyan An, DoGain Optoelectronic Technology (Suzhou), China
Break 15min

Haijiang Yu, HG Genuine, China
Yeyu Tong, The Hong Kong University of Science and Technology, Hong Kong, China
Haining Yang, Southeast University, China
Tao Tao, Nanjing University, China
Zheng Yang, Huawei Semiconductor, China

Special Event I

Academic Forum for Postgraduates in Optical Communications 2026

Session Description:

The Academic Forum for Postgraduates in Optical Communications 2026 is jointly hosted by Study on Optical Communications, Progress in Optoelectronics and Communications (POC), and the State Key Laboratory of Optical Communication Technologies and Networks (OCTN). It aims to continuously identify and nurture young researchers with academic potential and innovative vitality, and to build a high-level, diversified academic exchange platform for master's and doctoral students across China in optical communications and related interdisciplinary fields. Focusing on the frontiers and adhering to fairness and impartiality, the Forum is committed to promoting interdisciplinary and inter-institutional exchange and to identifying and cultivating emerging young academic talent.

Time: Sunday, 1 November 2026 | 8:00 a.m. – 12:00 p.m.
Venue: Conference Room 102C, 1F

Organisers:

Study on Opt ical Communications Journal
Progress in Optoelectronics and Communications Journal
State Key Laboratory of Optical Communication Technologies and Networks (OCTN)

Sponsors:

Huibei Provincial Institute of Communications (HBIC)
Peng Cheng Laboratory
FiberHome
Accelink
National Optoelectronics Innovation Center (NOEIC)
CICT Mobile
Wuhan Ligong Guangke (WUTOS)
Learning Conference

Chair:

Hanbing Li, State Key Laboratory of Optical Communication Technologies and Networks (OCTN)

Agenda:

Presider: **Songnian Fu**

08:00-08:10 **Opening**
08:10-10:40 **Doctoral Students (10 students)**
10:40-10:50 **Coffee Break**
10:50-11:50 **Master's Students (4 students)**
11:50-12:00 **Announce Results**

Fiber Short Course–Fiber Connectivity Technologies for AI Data Centers and HPC Systems

Course Description:

The rapid growth of AI clusters is driving unprecedented demands for bandwidth, density, power efficiency, and scalability in optical interconnect systems. Emerging architectures such as co-packaged optics (CPO), near-package optics (NPO), optical circuit switching (OCS), and advanced fiber shuffle solutions are reshaping the design of next-generation AI data centers.

This short course provides an industry-oriented overview of optical connectivity technologies enabling AI infrastructure, covering optical fibers, fiber management architectures, high-density connectors, fiber assemblies, optical test methodologies, and future technology trends. Participants will gain insights into key technical challenges, manufacturing considerations, and innovation opportunities across the optical interconnect ecosystem.

Ideal for engineers, researchers, students, and industry professionals involved in AI networking, photonics, optical communications, and data center infrastructure.

Time: Sunday, 1 November 2026 | 10:00 a.m. – 12:00 p.m.
Venue: Conference Room 102B, 1F

Organizer:

Corning Optical Communications

Target Audience:

Senior undergraduate, Master's and PhD students in optical engineering, photonics, optical communications, electronic engineering, and related fields, as well as early-career researchers and engineers seeking to deepen their understanding of optical fiber technologies, performance, and applications.

Module 1: Fiber Technologies for AI Infrastructure

Single-Mode Fiber (SMF)
Multimode Fiber (MMF)
Multicore Fiber (MCF)
Hollow Core Fiber (HCF)
Specialty Fibers for Photonics Applications

Module 2: AI Data Center Optical Interconnects

AI Data Center Network Architecture
Optical Interconnect Technologies for AI Data Centers

Student Event – Young Scientists Networking Lunch

Description:

Join us for an interactive networking lunch bringing together early-career researchers and students with experienced scientists from around the world. This session offers a unique opportunity to exchange ideas, explore shared research interests, gain insights into scientific careers, and build international connections in a welcoming and informal setting. Connect, get inspired, and expand your scientific network!

Time: Monday, 2 November 2026 | 12:00 p.m. – 1:30 p.m.
Venue: Press Conference Room, 2F

Organizers:

Nicolas Fontaine, Bell Labs, US
Haoshuo Chen, Bell Labs, US
Xiaonon Xu, Bell Labs, US
Bin Chen, Hefei University of Technology, China
Georg Rademacher, University of Stuttgart, Germany

Special Event II

Recruitment Information Session/ 招聘宣讲

(in Chinese)

时间 /Time： 2026 年 11 月 1 日 19:00-21:00　　地点 /Venue：1F, 101 会议室

ACP2026 会议期间会务组特邀康宁公司、华为、鹏城国家实验室和大湾区大学在会议现场做招聘宣讲，详细安排如下，欢迎参加：

时 间	会议安排
18:50-19:00	观众入场，企业宣传视频
19:00-19:20	康宁公司宣讲
19:20-19:40	华为宣讲
19:40-20:00	鹏城国家实验室宣讲
20:00-20:20	大湾区大学宣讲
20:20-21:00	自由交流

企业简介：

康宁，让进步发生。

康宁公司是全球领先的材料科学创新引领者之一。自 1851 年以来，我们始终相信，好奇心与科技创新能够推动世界进步。凭借玻璃科学、陶瓷科技、光学物理领域的专业积累，以及深厚的制造和工程实力，康宁不断将创新转化为真实世界中的产品与技术，让世界更加互联、更加智能。

连接世界，也是康宁创新故事的重要篇章。1970 年，康宁发明了世界上第一根低损耗光纤。今天，康宁光通信事业部持续为光纤到户、无线网络、数据中心等快速发展的领域提供解决方案。面对 AI 时代不断增长的高速、高密度连接需求，我们仍在不断探索光通信的更多可能。

而每一次突破，背后都是人的力量。我们正在寻找热爱技术、保持好奇、敢于追问“为什么”的你。如果你希望探索光学与光通信领域的前沿技术，深耕研发与技术创新，探索产品与应用的更多可能，让创新构想走向现实，欢迎加入康宁，与我们一起突破技术边界，连接未来。

华为

作为光产业的技术领导者，已连续 17 年保持市场份额全球第一，并深度参与光产业全球标准制定。面向 AI 时代，我们在光传送、光接入、光感知、管维平台等领域持续创新，构建以 AI 为中心的智能光网，以高品质的全光网助力 AI 普惠千家万户、千行万业，实现光智共融。   凭借多模态感知、波分复用、光网络传输、光纤传感及网络大模型等核心技术，我们持续巩固行业领先地位。作为传统业务数字化转型的坚实基石，与通信 AI 创新突破的核心驱动， 我们赋能千行万业——从家庭零卡顿的全光网络，到企业降本增效的数字化转型，再到智慧家庭、宽带接入和数据中心联接等核心场景，光技术正重塑数字生活。   面向未来，我们将持续打造智能、极简、超宽、无处不在的下一代全光网络。加入我们，一起探寻光 +AI 的无限可能，在创新前沿开启您的职业生涯，共同书写未来技术的新篇章！

鹏城国家实验室

是中央批准成立的突破型、引领型、平台型一体化的网络通信领域新型科研机构，属于国家事业单位，以宽带通信、新型网络和网络智能为主要研究方向，开展领域内战略性、前瞻性、基础性重大科学问题和关键技术研究，是国家战略科技力量的重要组成部分。

光纤通信与光电信息研究部聚焦宽带通信和新型网络中光电子 / 微电子材料、芯片、器件、模块、光纤、系统、网络和核心基础设计软件等光纤通信与光电信息前沿热点技术和领域交叉技术的研发，研究“摩尔时代 / 后摩尔时代”面向信息传输、交换、处理、感知的芯片材料、工艺、集成、控制、系统架构、基础理论、信号处理等一系列颠覆性、引领性、支撑性技术及系统应用，引领未来学术方向，推动产业快速发展。

招聘岗位面向光学工程、微电子、电子信息、通信工程、光电等理工科硕博开放，科研岗（助理研究员、博士后）薪资约 50W 起，技术岗（工程师）薪资约 40W 起。覆盖高速光通信、光算法、光系统、光交换、光芯片设计、先进封装、嵌入式开发、光学仿真等前沿研究方向，入职可享受高标准五险二金、优惠员工食堂、免费健身房、年度健康体检，可申请公租房及过渡住房等完善福利。经实验室评审认定的优秀人才，可依规享受相应层次的人才待遇和各项配套支持。

大湾区大学（GBU） 诚聘光学、光子学与信息技术领域人才

单位简介

大湾区大学是服务粤港澳大湾区国家战略而设立的新型研究型大学，坐落于粤港澳大湾区核心城市东莞，致力于建设以理工科为特色的世界一流研究型大学。

信息科学技术学院以计算机科学与技术，通信工程、人工智能及电子科学与技术为四大核心学科，建设国际一流科研平台，配备先进设备，支持光通信、光计算、光传感等领域的前沿研究。

岗位说明

招聘岗位：教研系列教师岗位，专职科研岗位（博士后、研究员）。

重点方向：光纤通信（短距高速传输、光网络、光交换等）、自由空间光通信、光计算、光纤传感及其他光学与光子信息技术相关领域。

同时招收相关方向的博士、硕士研究生，欢迎相关专业背景的优秀学生申请。

薪资待遇

教研系列：
薪酬待遇：提供具有国际竞争力的薪酬待遇；
启动经费：给予充足且全面的科研启动资金支持；
团队建设：独立 PI 制度，支持独立开展科研、自主招收博士、硕士、博士后，组建团队；
福利保障：提供校内过渡住房、完善的社会保险及福利保障、带薪休假。

专职科研系列:
提供具有国际竞争力的薪酬待遇和全方位科研及福利支持。

联系我们

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微信联系：ndeng2

Opening Ceremony & Plenary Session

08:30–12:10 · November 2 · Monday	
08:30-08:45	Opening Ceremony Presider: **William Shieh,** Westlake University, China Welcome Speech Prof. **Min Qiu,** Westlake University, China
08:45-08:50	Group Photo
08:50-09:50 · Plenary Session I · Multi-function Hall 1F Presider: **William Shieh,** Westlake University, China	
08:50-09:50	**Re-Imagining the Global Internet: "Nothing" is better than silica fibre** **David Payne** University of Southampton, United Kingdom
09:50-10:10	Coffee Break
10:10-12:10 · Plenary Session II · Multi-function Hall 1F Presider: **Yikai Su,** Shanghai Jiao Tong University, China	
10:10-11:10	**The Optical Foundation of the AI and 6G Era: Connecting Compute, Communications, and Intelligence** **Glenn Parsons** Ericsson, Canada
11:10-12:10	**Network Architecture Evolution for the Agentic AI Era** **Dennis Cai** Alibaba Cloud, United States



Prof Sir David N Payne

University of Southampton, United Kingdom

Title: Re-Imagining the Global Internet: "Nothing" is better than silica fibre

Abstract:

Conventional optical fibres have guided light through solid glass cores for more than half a century. Since their invention in the 1960s, they have become the foundation of global communications, with close to half a billion kilometres installed every year. Today, we stand at the threshold of the next major transformation: the arrival of ultra-low-loss hollow-core fibre (HCF).

By replacing glass with air as the transmission medium, and using a meticulously engineered geometrical structure in the cladding to confine the light, hollow-core fibres retain all the strengths of traditional fibres while removing the fundamental limitations imposed by solid glass. The performance gains are profound: latency reduced by around 30%, nonlinearity suppressed by more than a factor of a thousand, and the prospect of losses as low as 0.03 dB/km — low enough to support repeaterless transoceanic links. When manufactured at scale and integrated into commercial cable systems, these fibres promise a step-change in global data capacity and a dramatic reduction in cost-per-bit. In short, they offer the opportunity to reshape the communications landscape once again.

A fibre with an "air core" also brings exceptional environmental stability, opening new possibilities in precision sensing, inertial navigation, timing distribution, and high-frequency financial trading. And because the cladding behaves as a more than just a lower index material, we gain unprecedented geometric freedom: the ability to design dispersion profiles, loss windows, and operating regimes that simply do not exist in nature.

This talk will highlight the remarkable opportunities unlocked by these radical fibre architectures — from next-generation global networks to advanced sensing platforms — and outline why hollow-core technology represents one of the most significant advances in fibre optics since the original invention of the solid-core fibre.

Biography:

Prof D. N. Payne is an internationally distinguished research pioneer in photonics, having been in the field for over 50 years. Optical fibre technology is one of the greatest scientific successes of the last three decades and Payne's contributions are acknowledged as seminal in many areas. Optical fibres underpin the internet, provide new laser capability and environmental sensing, and drive growth to the benefit of all nations.

Payne's work spans many diverse areas of photonics, from telecommunications and optical sensors to nanophotonics and optical materials. As others have noted, with his colleagues he has made many of the key technical achievements in almost every area of optical fibre technologies and his work has had a direct impact on worldwide telecommunications, as well as nearly all fields of optical R&D. As a result, he is the most highly honoured UK scientist in photonics.

David's pioneering work in fibre fabrication in the 70's resulted in almost all the special fibres in use today. He led the team that in 1985 first announced the silica fibre laser and the Erbium-Doped Optical Amplifier (EDFA), the device that fuelled an explosive growth in the internet through its ability to transmit and amplify vast amounts of data. The EDFA is widely regarded as being one of the foremost and most significant developments in modern telecommunications.

David is widely regarded as a charismatic and influential speaker, with extensive international experience. He is known throughout the world and is much in demand as a Plenary Speaker for his insight in a diverse range of scientific topics.

He has published over 650 Conference and Journal papers and been awarded the top American, European and Japanese prizes in photonics, a rare achievement.

As well as the UK Rank Prize for Optics and the prestigious US Tyndall Award, he is a Franklin Laureate (USA), an Eduard Rhein Laureate (Europe) and a Millennium Prize Laureate. He is also an original member of the Highly Cited Researchers (USA) where he is honoured as one of the most referenced, influential researchers in the field and a Thomson REUTERS Citation Laureate.

In 2013, he was Knighted for services to photonics in the Queen's New Year's Honours and in 2018 with his colleagues won the Queen's Anniversary Prize that celebrates excellence, innovation and public benefit in work carried out by UK universities.



Dr. Dennis Cai

Alibaba Cloud, United States

Title: Network Architecture Evolution for the Agentic AI Era

Abstract:

As large models shift from training to inference-centric architectures, AI infrastructure undergoes a fundamental transformation. The rise of Agentic AI demands efficient, predictable token production at scale—imposing unprecedented requirements on optical interconnects, the backbone of AI computing networks.This keynote traces the evolution of Alibaba Cloud's AI network architecture across three dimensions: Scale-out (HPN and TPN), Scale-up (UPN), and Scale-across (eCore). We examine the optical interconnect technology stack enabling these architectures: 800G/1.6T Pluggable Optics, 3.2T/6.4T NPO, and the path toward future terabit solutions. The discussion spans switch silicon photonic integration, high-radix architectures, and advanced packaging technologies that together define next-generation AI-optimized interconnects. Join us to explore how emerging AI workloads are reshaping optical network design—and what this means for the future of AI infrastructure at scale.

Biography:

Dennis Cai is the Vice President of Product & Engineering and the Head of Network R&D at Alibaba Cloud Intelligence Group. He is a prominent figure in the field of cloud infrastructure, specifically known for his leadership in developing high-performance networking solutions that power some of the world's largest AI and cloud ecosystems.

Professional Profile

As a key architect of Alibaba Cloud's physical and software-defined networks, Dennis Cai oversees the evolution of network infrastructure across several domains:

· Data Center Networking: Designing predictable, low-latency architectures (such as the HPN - High Performance Network) specifically optimized for Large Language Model (LLM) training.

· Edge & Backbone: Driving the strategy for metro, backbone, and edge networks to support global cloud distribution.

· Infrastructure Innovation: Leading research into RDMA (Remote Direct Memory Access), advanced congestion control, and SDN 3.0, which utilizes programmable hardware to create "predictable" network services.



Dr. Glenn Parsons

Ericsson, Canada

Title: The Optical Foundation of the AI and 6G Era: Connecting Compute, Communications, and Intelligence

Abstract:

The convergence of artificial intelligence, cloud computing, and next-generation communications is reshaping how networks are designed, built, and operated. Emerging applications are driving unprecedented demands for bandwidth, latency, synchronization, resilience, and energy efficiency, while increasingly distributing intelligence across data centers, networks, and edge environments.

Optical networking is becoming a foundational infrastructure layer for this transformation, enabling the efficient movement of data between compute resources, users, devices, and services at global scale. From data center interconnects to metro, transport, access, and mobile networks, optical technologies provide the performance and scalability needed to support the growing integration of computing and communications.

This keynote explores the evolving role of optical networks in an era where compute, communications, and intelligence are becoming deeply interconnected. It examines emerging architectural trends, operational challenges, and opportunities for collaboration across industry, academia, and standards communities to build the open, interoperable, and sustainable infrastructure that will underpin the next decade of innovation.

Biography:

Glenn Parsons is an internationally known expert in networking, including mobile transport and Ethernet. He is a standards advisor with Ericsson Canada, where he coordinates standards strategy and policy for Ericsson, including network architecture for 5G radio transport networks. Previously, he has held positions in development, product management and standards architecture in the ICT industry. Over the past number of years, he has held several management and editor positions in various standards activities, including IETF, IEEE, and ITU-T. He has been an active participant in the IEEE-SA Board of Governors, Standards Board, and its Committees since 2004. He is currently involved with mobile transport standardization in IEEE and ITU-T and is the chair of IEEE 802.1. In addition to being the founding Editor-in-Chief for IEEE Communications Standards Magazine, he was previously a Senior Technical Editor for IEEE Communications Magazine. He graduated in 1992 with a B.Eng. degree in electrical engineering from Memorial University of Newfoundland.

Technical Session

November 2 · Monday												
	D1 Conference Room 103A, 1F	**D2** Conference Room 103B, 1F	**D3** Conference Room 103C, 1F	**D4** Conference Room 102A, 1F	**N1** Conference Room 102B,1 F	**N3** Conference Room 102C, 1F	**T1** Multi-function Hall A, 1F	**T2** Multi-function Hall B, 1F	**T4** Multi-function Hall C, 1F	**NP4** Conference Room 101, 1F	**NP1** Conference Room 206, 2F	**NP3** Conference Room 207, 2F
13:30-15:30	**CPO and Optical Interconnects** Presider: Lei Ting, Shenzhen University, China	**Heterogeneous integration of lasers (I)** Presider: Zihao Wang, Institute of Physics, Chinese Academy of Science, China	**Heterogeneous Integration and Integrated Photonics** Presider: Yu Han, Sun Yat-sen University, China	**Passive Photonic Components Across Domains (1)** Presider: Victor Torres Company, Chalmers University of Technology, Sweden	**AI Native Optical Network and Emerging Fiber Systems** Presider: Yuan Cao, Nanjing University of Posts and Telecommunications, China	**AI Agents and Autonomous Optical Network Control** Presider: Ning Deng, Great Bay University, China	**FSO and Wireless Access** Presider: Jiahao Huo, University of Science and Technology Beijing, China	**High-Speed Coherent Transmission and DSP** Presider: Fan Zhang, Peking University, China	**Free-space Integrated Sensing and Communications** Presider: Xiong Deng, Southwestern Jiao Tong University, China	**Materials, Nanofabrication, and Characterization Techniques (1)** Presider: Yuanlin Zheng, Shanghai Jiao Tong University, China	**DAS and Nano-sensing #1** Presdier: Li Pei, Beijing Jiaotong University, China	**Integrated Photonics for Quantum Communications** Presider: Xiaomin Hu, University of Science and Technology of China, China
15:30-16:00	**Coffee Break**											
16:00-17:30	**Optical Coupling and Packaging** Presider: Shaoliang Yu, Zhejiang Lab, China	**Heterogeneous integration of lasers (II)** Presider: Yating Wan, King Abdullah University of Science and Technology, Saudi Arabia	**Integrated Lasers and Photonic Devices** Presider: Siyuan Yu, Sun Yat-sen University, China	**Passive Photonic Components Across Domains (2)** Presider: Yong Liu, Technical University of Denmark, Denmark	**Quantum Optical Networks and Performance Monitioring** Presider: Bingli Guo, Beijing University of Posts and Telecommunications, China	**Optical Data Centers and Distributed AI Training** Presider: Yongcheng Li, Soochow University, China	**Advacned Coding Technology** Presider: Tianwai Bo, Beijing Institute of Technology, China	**Space-Division Multiplexing and Multicore Amplification** Presider: Fan Yu, Huawei Optical Product Line Planning Department, China	**Optical Wireless Receivers, Visible Light Communications and Positioning** Presider: Oskars Ozolins, Riga Technical University, Latvia	**Materials, Nanofabrication, and Characterization Techniques (2)** Presider: Qiming Zhang, University of Shanghai for Science and Technology, China	**DAS and Nano-sensing #2** Presider: Xingchen Ji, Shanghai Jiao Tong University, China	**High-dimensional quantum entanglement** Presider: Yanxiao Gong, Nanjing University, China
18:30-20:30	**Welcome Reception (outdoor)**											

November 3 · Tuesday

	D1 Conference Room103A, 1F	D2 Conference Room 103B, 1F	D3 Conference Room103C, 1F	D4 Conference Room102A, 1F	N1 Conference Room102B,1 F	N3 Conference Room 102C, 1F	T1 Multi-function Hall A, 1F	T2 Multi-function Hall B, 1F	T4 Multi-function Hall C, 1F	NP4 Conference Room 101, 1F	NP1 Conference Room 206, 2F	NP3 Conference Room 207, 2F
08:30-10:00	**Optical Beam Manipulation** Presider: Jiawei Wang, Harbin Institute of Technology (Shenzhen) , China	**Heterogeneous integration for Quantum Photonics** Presider: Xingchen Ji, Shanghai Jiao Tong University, China	**Photodetectors and Infrared Optoelectronics** Presider: Lianping Hou, University of Glasgow, United Kingdom	/	**Optical Wireless Communication Networks** Presider: Wei Wang, Beijing University of Posts and Telecommunications, China	**Optical Network Sensing, Monitoring and Resilience** Presider: Yvan Pointurier, Huawei Technologies, France	**Impariments Mitigation** Presider: Kangping Zhong, The Hong Kong Polytechnic University, Hong Kong, China	**Integrated Optical Fiber Sensing and Communication** Presider: Xian Zhou, University of Science and Technology Beijing, China	**Beam Steering and Alignment for Mobile Optical Links** Presider: Ming Che, Kyushu University, Japan	**Materials, Nanofabrication, and Characterization Techniques (3)** Presider: Wei Xin, Northeast Normal University, China	**Hollow-Core Fibers and Optical Imaging-based Sensor** Presider: Ting Feng, Northeastern University, China	**Quantum memory** Presider: Jianwei Tang, Huazhong University of Science and Technology, China
10:00-10:30	**Coffee Break**											
10:30-12:00	**Emerging Materials for Photonic Integration** Presider: Hao Hu, Technical University of Denmark, Denmark	**Integrated Photonic Circuits for Optical Field Manipulation** Presider: Liu Liu, Zhejiang University, China	**Photodetectors and Novel Materials** Presider: Michael Sumetsky, Aston University, United Kiingdom	/	**Space Optical Transport Networks** Presider: Tingwei Wu, Chongqing University of Posts and Telecommunications, China	**Digital Twins and Physical-Layer Optimization** Presider: Danshi Wang, Beijing University of Posts and Telecommunications, China	**High-Speed PON** Presider: Ming Luo, China Information and Communication Technologies Group Corporation, China	**Optical Frequency Combs and Advanced Optical Transmission** Presider: Yixiao Zhu, Shanghai Jiao Tong University, China	**Advanced Signal Processing for Optical Transmission** Presider: Jian Zhao, South China University of Technology, China	**Materials, Nanofabrication, and Characterization Techniques (4)** Presider: Jian Xu, East China Normal University, China	**Advanced Reflectometry Techniques for Distributed Multi-Parameter Sensing** Presider:Zheng Zheng, Beihang University, China	**Quantum Light Source** Presider: Fangxiang Wang, University of Science and Technology of China, China
12:00-13:30	**Lunch Break**											
	N2 Conference Room103A, 1F	**NP4** Conference Room 103B, 1F	**N4** Conference Room103C, 1F	**D4** Conference Room102A, 1F	**N3 (Parallel)** Conference Room102B,1 F	**N3** Conference Room 102C, 1F	**T1** Multi-function Hall A, 1F	**T3** Multi-function Hall B, 1F	**T4** Multi-function Hall C, 1F	**NP2** Conference Room 101, 1F	**NP1** Conference Room 206, 2F	**NP3** Conference Room 207, 2F
13:30-15:30	**Optical Interconnect and Integration** Presider: Meng Xiang, Guangdong University of Technology, China	**Materials, Nanofabrication, and Characterization Techniques (5)** Presider: Shikai Deng, Shanghai Institute of Microsystem and Information Technology, China	**Optical sensing and communication in access networks** Presider: Shikui Shen, China Unicom, China	**Passive Photonic Components Across Domains (3)** Presider: Lan Li, Westlake University, China	**Optical Access and Satellite Networks** Presider: Jiawei Zhang, Beijing University of Posts and Telecommunications, China	**Intelligent Optical Network Technologies and Quantum Networking** Presider: Xiaoliang Chen, University of Science and Technology of China, China	**Optoelectronics Devics for Short Reach** Presider: Xiang Li, China University of Geosciences, China	**Novel Fibers and Space-Division Multiplexing: Transmission, DSP and Sensing** Presider: Anxu Zhang, China Telecom Research Institute, China	**Structured Light and Turbulence-Resilient Optical Communications** Presider: Huibin Zhou, Huazhong University of Science and Technology, China	**Microwave Photonic Devices and Systems (1)** Presider: Xiangchuan Wang, Nanjing University of Aeronautics and Astronautics, China	**Integrated Sensing and Communication in Optical Fiber Networks** Presider: Yaxi Yan, The Hong Kong Polytechnic University, Hong Kong, China	**Quantum Communication over Fiber Channels** Presider: Xiang Cheng, Huazhong University of Science and Technology, China
15:30-17:30	**Coffee Break** **Poster Session & Demo Zone, 2F**											
18:30-20:30	**Banquet & Award Ceremony · Multi-function Hall, 1F**											

November 4 · Wednesday

	N2 Conference Room 103A, 1F	D2 Conference Room 103B, 1F	D3 Conference Room 103C, 1F	D4 Conference Room 102A, 1F	N1 Conference Room 102B,1 F	N4 Conference Room 102C, 1F	T2 Multi-function Hall A, 1F	T3 Multi-function Hall B, 1F	T4 Multi-function Hall C, 1F	NP2 Conference Room 101, 1F	NP1 Conference Room 206, 2F
08:30-10:00	**Optical Switch for AI Infra** Presider: Wei Wang, Beijing University of Posts and Telecommunications, China	**Heterogeneous integration of Electro-Optic Modulator** Presider: Hongtao Lin, Zhejiang University, China	**Lasers and Nonlinear Photonics** Presider: Ting Wang, Shanghai Jiao Tong University, China	**Passive Photonic Components Across Domains (4)** Presider: Qiancheng Zhao, Southern University of Science and Technology, China	**Semantic and DCI Optical Networks** Presider: Nan Hua, Tsinghua University, China	**Key technologies for VHSP (1)** Presider: Hanhyub LEE, ETRI, Korea	**Optical Interconnects** Presider: Yan He, The Hong Kong Polytechnic University, Hong Kong, China	**AI and Machine Learning for Optical Communications** Presider: Yi Yu, The Hong Kong Polytech University JinJiang Technology and Innovation Research Institute, China	**Mid-Infrared Free-Space Optical Communications** Presider: Haifeng Yao, Beijing Institute of Technology, China	**Microwave Photonic Devices and Systems (2)** Presider: Yiwei Xie, Zhejiang University, China	**Biophotonics and Optical Fiber Sensors for Healthcare** Presider: Nicolas Joly, Max Planck Institute for the Science of Light, Germany
10:00-10:30	**Coffee Break**										
10:30-12:00	**Photonic AI Computing** Presider: Liangjun Lu, Shanghai Jiao Tong University, China	**Heterogeneous integration of Novel Materials** Presider: Hongtao Lin, Zhejiang University, China	**Optical Communications and Modulation** Presider: Chao Zhao, Institute of Semiconductors, CAS, China	**Passive Photonic Components Across Domains (5)** Presider: Hao Hu, Technical University of Denmark, Denmark	**AI-assisted Optical Network** Presider: Xinhao Li, Westlake University, China	**Key technologies for VHSP (2)** Presider: Jim Zou, Adtran Networks, United States	**Transceiver Impairments and Nonlinear Equalization** Presider: Bin Chen, Hefei University of Technology, China	**Transceiver Impairment Characterization, Calibration and Compensation** Presider: Zhaopeng Xu, Pengcheng Laboratory, China	**Satellite Optical Links: Standards, Turbulence and Adaptive Scheduling** Presider: Chen Chen, Chongqing University, China	**Microwave Photonic Devices and Systems (3)** Presider: Wei Wei, Beijing Institute of Technology, China	**Advanced Demodulation and Signal Processing for Fiber-Optic Sensing** Presider: Liang Zhang, Shanghai University, China
12:00-13:30	**Lunch Break**										

	N2 Conference Room 103A, 1F	D2 Conference Room 103B, 1F	D3 Conference Room 103C, 1F	D4 Conference Room 102A, 1F	PDP Session Conference Room 102B,1 F	N4 Conference Room 102C, 1F	T2 Multi-function Hall A, 1F	T3 Multi-function Hall B, 1F	T3 (Parallel) Multi-function Hall C, 1F	NP2 Conference Room 101, 1F
13:30-15:30	**Optical AI Architecture and Network** Presider: Xiao Lin, Fuzhou University, China	**Integrated Silicon Nitride Photonic Circuits** Presdier: Jingyi Tian, Westlake University, China	**High-Speed Optical Interconnects** Presider: Yunhong Ding, Technical University of Denmark, Denmark	**Passive Photonic Components Across Domains (6)** Presider: Xinhao Li, Westlake University, China	**Post-deadline Paper Session** Presider: Liu Liu, Zhejiang University, China & Lan Li, Westlake University, China	**AI and access network** Presider: Dezhi Zhang, China Telecom, China	**Hollow-Core Fiber Systems and Performance Monitoring** Presider: Fei Liu, University of Science and Technology Beijing, China	**Short Reach Interconnects - Equalization, Coding, and Monitoring** Presider: Stephan Pachnicke, Christian-Albrechts-University of Kiel, Germany	**Coherent Optics for Access and Datacenter Networks** Presider: Zhenning Tao, Fujitsu, China	**Microwave Photonic Devices and Systems (4)** Presider: Zejie Yu, Zhejiang University, China
15:30-16:00	**Coffee Break**									
16:00-17:30	**Photoics for AI and Computing** Presider: Yuxin Xu, Zhejiang University of Technology, China	/	**Integrated Photonics Applications and Devices** Presider: Ken Mishina, The University of Osaka, Japan	**Passive Photonic Components Across Domains (7)** Presider: Isidora Teofilovic, Technical University of Denmark, Denmark	/	**New applications of access networks** Presider: Junwen Zhang, Fudan University, China	**AI-Enabled Networks and Advanced Communication Techniques** Presider: Danshi Wang, Beijing University of Posts and Telecommunications, China	**Co-Packaged Optics and Advanced Coherent Transceiver DSP** Presider: Zhaopeng Xu, Pengcheng Laboratory, China	**Ultra-Wideband and Multi-Core Fiber Transmission and Performance Monitoring** Presider: Besma Kalla, Eindhoven University of Technology, Netherlands	**Microwave Photonic Devices and Systems (5)** Presider: Qifan Yang, Peking University, China

D1: Advanced Packaging, Interfacing, and System Integration

Conference Room 103A, 1F

13:15-15:30 · November 2, 2026 · Monday

CPO and Optical Interconnects

Presider: Lei Ting, Shenzhen University, China

13:15-13:45 · ACP2026-0708-3 **Invited**

1.6Tbps optical engine for co-packaged optics systems

Bigeng Chen[1*]

1.Zhejiang Lab, China

A 1.6Tbps optical engine is designed and implemented for co-packaged optics (CPO) systems. The optical engine is assembled using a 2D packaging structure, where the silicon photonic chip and drivers/TIAs are flip-chip bonded onto a package substrate.

13:45-14:15 · ACP2026-0817-1 **Invited**

Ultra-High-Density Silicon Photonic Interconnects for AI Computing Clusters

Binhao Wang[1, 2*]

1.Xi'an Institute of Optics and Precision Mechanics, Chinese Academy of Sciences, China;2.Beijing Lingxi Photonix Technology Co., Ltd., China

This talk discusses the key technology drivers and emerging trends in optical interconnects for AI infrastructure, highlighting recent advances in silicon microring-modulator-based interconnects and their potential to enable scalable, energy-efficient CPO systems.

14:15-14:45 · ACP2026-0904-2 **Invited**

Advanced optical interconnection for I/O in AI Compute Infrastructure

Yuan Li[1]

1.Zhangjiang Laboratory, China

This talk presents advanced optical-interconnect solutions at Zhangjiang Laboratory for AI-infrastructure I/O, including 90-GHz MRMs, dual-mode scalable, PCIe-compatible low-latency architectures, O/C-band DWDM transmitters and an quantum-dot-comb-based O-band transmitter.

14:45-15:15 · ACP2026-0629-14 **Invited**

AI-Driven Multidimensional Silicon Photonics Devices and Intelligent Photonic Processors

Yeyu Tong[1*]

1.Hong Kong University of Science and Technology (Guangzhou), China

This report presents our latest findings on silicon photonic devices and circuits, including photonic engines with microring modulators, multidimensional chip-fiber coupling interfaces, and applications in programmable structured light generation, manipulation, and high-capacity inter-chip interconnects.

15:15-15:30 · ACP2026-0624-2 **Industry Innovation Nomination**

Ultra-Low-Loss Fusion Splicing of Anti-Resonant Hollow-Core Fiber Enabled by Dual-Beam CO_2 Laser Processing

Haojie Chen[1], Hao Zhang[1], Ningbo Duan[1], Jinlin Dong[2], Xiaoyu Chen[3], Yunyao Wei[3], Yu Qin[4], Yichun Shen[5], Limin Xiao[4], Ye Chen[1*], Fei Xu[3, 6*]

1.MIIT Key Laboratory of Aerospace Information Materials and Physics, College of Physics, Nanjing University of Aeronautics and Astronautics, China;2.School of Physics, Nanjing University, China;3.National Laboratory of Solid-State Microstructures and College of Engineering and Applied Sciences, Nanjing University, China;4.Advanced Fiber Devices and Systems Group, Key Laboratory of Micro and Nano Photonic Structures (MoE), Key Laboratory for Information Science of Electromagnetic Waves (MoE), Shanghai Engineering Research Center of Ultra-Precision Optical Manufacturing, College of Future Information Technology, Fudan University, China;5.Zhongtian Technology Advanced Materials Co., Ltd., China;6.Shenzhen Research Institute of Nanjing University, Nanjing University, China

Dual-beam CO_2 laser splicing of anti-resonant hollow-core fibres achieves record-low 0.01 dB insertion loss and 263.1 gf mechanical strength, overcoming arc-splicing thermal limits to enable scalable hollow-core fibre integration in optical networks.

15:30-16:00 Coffee Break

16:00-17:45 · November 2, 2026 · Monday

Optical Coupling and Packaging

Presider: Shaoliang Yu, Zhejiang Lab, China

16:00-16:30 · ACP2026-0715-74 **Invited**

Advanced Waveguide Grating Couplers for high bandwidth-density applications

Hon Ki Tsang[1*], Xuetong Zhou[1]

1.The Chinese University of Hong Kong, Hong Kong, China

Waveguide grating couplers offerhigher bandwidth density than edge couplers for high-capacityinterconnects. We review recent developments in volume production readydesigns that attainsub-decibel coupling losses, 1dBbandwidths 200 nm, and low back reflections.

16:30-17:00 · ACP2026-0820-1 **Invited**

Glass-based 3D waveguides for high-density optical packaging

Ting Lei[1]

1.Shenzhen University, China

We develop the glass based 3D waveguides using the laser direct writing technology for optical packaging and interconnecting in datacenters, including the multi-core fiber fan-in fan-out and high density optical waveguides coupling devices.

17:00-17:15 · ACP2026-0701-211

Sub-dB Polymer-to-Silicon Photonic Adiabatic Coupler Enabled by a SiN Interlayer

Toon De Baere[1*], Jef Van Asch[2], Lucas Van Severen[1], Imene Jadli[2], Joris Van Campenhout[2], Peter Ossieur[1], Jeroen Missinne[1], Geert Van Steenberge[1]

1.UGent, Belgium;2.imec, Belgium

We demonstrate a polymer-to-silicon photonic waveguide adiabatic coupler through a SiN interlayer, including opening of the back-end-of-line for SiN access, achieving coupling losses below 1 dB in the O-band and 1.5 dB in the C-band.

17:15-17:30 · ACP2026-0701-46

Low-Divergence Tri-Tip Inverse-Taper Silicon End-Fire Emitter for Broadband Free-Space Emission

Yicheng Wang[1], Tianqi Song[1], Jing Wang[1*]

1.Southern University of Science and Technology, China

We report a tri-tip silicon end-fire emitter enabling low-divergence broadband free-space emission. At 1550 nm, TE and TM divergences measure 9.3 by 13.7 degrees and 11.2 by 15.6 degrees, with 0.41 dB and 0.57 dB losses.

17:30-17:45 · ACP2026-0701-48

Silicon Polarization Controller with Integrated End-Fire Emitter for Tunable Linearly Polarized Output

Yicheng Wang[1], Ningyu Zhang[1], Jing Wang[1*]

1.Southern University of Science and Technology, China

We report a thermo-optic silicon polarization controller with an integrated end-fire emitter. At 1550 nm, it achieves 2.4/1.5 dB losses, 25.5/28.2 dB extinction ratios, 22.5 mW power, and validates four representative free-space linear-polarization beam profiles.

08:30-10:00 · November 3, 2026 · Tuesday

Optical Beam Manipulation

Presider: Jiawei Wang, Harbin Institute of Technology (Shenzhen) , China

08:30-09:00 · ACP2026-0701-29 **Invited**

Integrated optical phased array for optical wireless communications

Hao Hu[1]

1.Technical University of Denmark, Denmark

I will present our recent advances in integrated optical phased array, which enable fast beam steering, tracking, and adaptive control for robust optical links by replacing bulky mechanical pointing systems.

09:00-09:30 · ACP2026-0911-2 **Invited**

Versatile functionalities of on-chip metasurfaces

Ke Xu[1]

1.Harbin Institute of Technology (Shenzhen), China

Current integrated optical chips are primarily based on single-mode or few-mode waveguides, with functional devices such as beam splitters, couplers, and phase shifters having been constructed. However, for slab waveguides far from the guided-mode cutoff con-

dition, on-chip beam manipulation remains challenging. To address this, drawing inspiration from the wavefront manipulation mechanisms and applications of free-space optical metasurfaces, the concept of metasurfaces has been extended to the on-chip domain. We focus on the working principles and implementation methods of on-chip metasurfaces, which enable the manipulation of light propagation characteristics in slab waveguides through phase-gradient metasurfaces. Furthermore, we explore the applications of such on-chip metasurfaces in the field of information photonics: 1) miniature spectrometers; 2) optical encryption systems; 3) image processing units; and 4) Fourier optics operators.

09:30-09:45 · ACP2026-0715-120
Metasurface Photonic-crystal Multivariate Optical Elements with Integrated Metalenses
Pengjiu Zhao[1], Jiangbing Du[1*], Zuyuan He[1]
1.Shanghai Jiao Tong University, China
We present a single-slab metasurface photonic-crystal MOE with integrated metalenses for input and output coupling. This monolithic architecture performs optical spectral encoding while eliminating external optics and relaxing alignment tolerances.

09:45-10:00 · ACP2026-0715-33
Optical Path Scaling via Multimode Recirculation
Xiyue Lyu[1], Yaotian Zhao[2*], Wei Chu[2]
1.Fudan University, China;2.Zhangjiang laboratory, China
We propose a nonresonant silicon waveguide that extends effective propagation via sequential multimode recirculation, achieving 2.65- and 3.07-fold group-delay enhancements in three- and five-mode configurations, respectively.

10:00-10:30 Coffee Break

10:30-12:15 · November 3, 2026 · Tuesday
Emerging Materials for Photonic Integration
Presider: Hao Hu, Technical University of Denmark, Denmark

10:30-11:00 · ACP2026-0828-3 **Invited**
Hybrid-Integrated TFLN-Based Coherent Optical Sub-Assembly Enabling 128Gbaud DP-16QAM 800Gps/λ Transmission
Keqi Cao[1*], Xiaonan Chen[1, 2], Yu Liu[1*]
1.Institute of Semiconductor, Chinese Academy of Sciences, China;2.University of Chinese Academy of Sciences, China
We experimentally demonstrate a coherent optical subassembly based on thin-film lithium niobate with hybrid integration, featuring a 3-dB bandwidth over 75 GHz and enabling 128-Gbaud DP-16QAM transmission for 800-Gbps/λ applications.

11:00-11:30 · ACP2026-0901-6 **Invited**
Ferroelectric optical memristors
Yang Zhang[1*], Yiyang Wen[1]
1.Nankai University, China
This PMN-PT optical memristor relies on ferroelectric domain rearrangement to achieve deterministic non-volatile multilevel optical-phase modulation, featuring fast switching, low energy consumption and long-term state retention.

11:30-12:00 · ACP2026-0831-6 **Invited**
Wafer level heterogeneous co-packaging optoelectronics for ultrabroadband microsystems
Liang Zhou[1*]
1.Shanghai Jiao Tong University, China
Modern communication, sensing,and computing systems are increasingly markedby relentless growth in data throughput and bandwidth.Delivering this trend inan efficientfashionhas driven the fusionof photonics for broadbandoperationandlow-loss transmission with electronics for powerful signal processing,leading to the growthof optoelectronic microsystems. However, conventional interfaces and packaging schemes between photonic and electronic chips impose loss, bandwidth,and footprint penalties,particularlysevere at millimetre-wave and terahertz frequencies.Here we demonstrate a co-packaged optoelectronics (CPO) platform that densely integrates complementary metal–oxide–semiconductor (CMOS), gallium nitride (GaN) and indium phosphide (InP) electronic chips together with a thin-film lithium niobate (TFLN) modulator.

12:00-12:15 · ACP2026-0702-1
Fabrication-Friendly PZT First-Order Bragg Topological Slow-Light Waveguide for Compact Electro-Optic Phase Modulation
Jing He[1], Wei Dou[1], Zhe Sun[2], Ye Zheng[2], Kanzhong Yao[2], Jun Tan[3], Chao Liu[3], Kunpeng Zhai[1*], Huashun Wen[1*]
1.Nankai University, China;2.Institute of Artificial Intelligence (TeleAI), China Telecom, China;
3.HiStarlink (Wuxi) Aerospace Technology Co., Ltd, China
A continuous PZT rib waveguide with SSH-like Bragg width modulation enables compact slow-light electro-optic tuning, achieving 681.8 nm/RIU sensitivity, 103.7 pm/V estimated tuning, low VπL, and mitigated RF-bandwidth penalty for PZT microwave photonic modulators.

D2: Integrated Photonic Circuits and Heterogeneous Platforms

Conference Room 103B, 1F

13:30-15:30 · November 2, 2026 · Monday

Heterogeneous integration of lasers (I)

Presider: Zihao Wang, Institute of Physics, Chinese Academy of Science, China

13:30-14:30 · ACP2026-0625-11 **Tutorial**

Integrated Silicon Photonics with Quantum Dot On-Chip Lasers

Yating Wan[1*]

1.King Abdullah University of Science and Technology, Saudi Arabia

Silicon photonics needs efficient on-chip light sources to scale AI, computing, sensing, and communications. I will present heterogeneous quantum-dot lasers on silicon, highlighting low thresholds, narrow linewidths, stability, and applications in PUC and Lidar.

14:30-14:45 · ACP2026-0630-114

Self-Injection-Locked Laser Based on a CMOS-Compatible Compact Spiral Resonator

Wei Chen[1], Chenlei Li[1], Yueyang Zhang[1], Cunyu Shi[1], Tao Shu[1], Daoxin Dai[1,2*]

1.Zhejiang University, China;2.China Jiliang University, China

We demonstrate a hybrid-integrated self-injection-locked laser using a compact silicon nitride spiral resonator fabricated in a standard CMOS-compatible process. The device achieves a 96.3 GHz mode-hop-free tuning range and a Lorentzian linewidth of47.7 Hz.

14:45-15:00 · ACP2026-0701-132

A Self-Injection-Locked Laser with Synchronous Electro-Optic Tuning for FMCW Ranging

Xiao Wu[1], Xiaoying Guo[2], Xinhang Li[2], Zhenwu Mo[1], Yang He[1], Cheng Zeng[1], Yuyao Guo[2], Linjie Zhou[2], Jinsong Xia[1]

1.Wuhan National Laboratory for Optoelectronics and School of Optical and Electronic Information, Huazhong University of Science and Technology, China;2.State Key Laboratory of Photonics and Communications, Shanghai Key Lab of Navigation and Location Services, Department of Electronic Engineering, Shanghai Jiao Tong University, China

By using synchronous tuning, we demonstrate a hybrid-integrated self-injection-locked laser on a thin-film lithium tantalate on insulator (LTOI) platform that achieves a 4.8-GHz FMCW chirp at 100 kHz while maintaining an 390-Hz Lorentzian linewidth.

15:00-15:15 · ACP2026-0625-4

Laser cavity-soliton microcombs generation in normal-dispersion silicon nitride microresonators

Yingge Tao[1,2], Lei Wang[2], Houling Ji[2], Zhaonian Wang[2], Ke Xu[1,2,3*], Chunyang Ma[2*]

1.Department of Integrated Circuits, Harbin Institute of Technology, Shenzhen, China;2.Pengcheng Laboratory, China;3.Guangdong Provincial Key Laboratory of Semiconductor Optoelectronic Materials and Intelligent Photonic Systems, Harbin Institute of Technology, China

A CMOS-compatible normal-dispersion silicon nitride microring laser cavity-soliton microcomb with 150 GHz FSR is demonstrated. It achieves stable mode-locking at only 8.3 mW pump power with 58% conversion efficiency. Single and dual FSR soliton states are switchable.

15:15-15:30 · ACP2026-0701-85 **Industry Innovation Nomination**

Mode-Hop-Free Electro-Optic Synchronous Tuning in an Integrated Vernier Laser

Zhenwu Mo[1], Xiao Wu[1], Yang He[1], Cheng Zeng[1], Jinsong Xia[1*]

1.Wuhan National Laboratory for Optoelectronics and School of Optical and Electronic Information, Huazhong University of Science and Technology, China

We demonstrate a hybrid integrated Vernier laser on lithium tantalate on insulator with electro-optic synchronous tuning, achieving a 34.2 GHz chirp bandwidth at 1 MHz chirp rate with under 1% root-mean-square nonlinearity without predistortion.

15:30-16:00 Coffee Break

16:00-18:00 · November 2, 2026 · Monday

Heterogeneous integration of lasers (II)

Presider: Yating Wan, King Abdullah University of Science and Technology, Saudi Arabia

16:00-16:30 · ACP2026-0902-1 **Invited**

Recent Advances in Quantum Dot Lasers for Optical I/O

Zihao Wang[1]

1.Institute of Physics, Chinese Academy of Science, China

Recent advances in quantum dot DFB and comb lasers with 100, 200, and 400 GHz mode spacings are presented, highlighting their performance advantages for optical I/O applications.

16:30-17:00 · ACP2026-0902-3 **Invited**

Integrated Photonics based on Lithium Tantalate-on-Insulator

Jinsong Xia[1*]

1.Huazhong University of Science and Technology, China

Lithium Tantalate-on-Insulator is a new platformfor high-performance modulators and integrated photonics. We will reportnew progress inLithium Tantalate-on-Insulator photonics, including optical coupling, phase tuning, hybrid-integratedmodulator, and integrated chips.

17:00-17:15 · ACP2026-0715-45

Heterogeneously Integrated III-V-on-Silicon Directly Modulated DFB Laser on a Standard 220 nm Silicon Photonics Platform

Yu Qiao[1], Xian Zhang[2], Caiqiang Gu[1], Bing Wang[1,2], Ruijun Wang[1,2*], Siyuan Yu[1,2]

1.Sun Yat-sen University, China;2.Guangzhou Innovation Center of Optoelectronics and Microelectronics, China

We demonstrate a directly modulated III-V-on-silicon distributed feedback laser on a standard 220 nm platform. It achieves 7.4 mW on-chip single-facet output power, 54.2 dB side-mode suppression, 9.46 GHz bandwidth, and a 10 GBaud eye.

17:15-17:30 · ACP2026-0714-13

GaSb–TFLN hybrid integrated laser based on cascaded micro-ring resonators in the 2 μm waveband

Songjian Lin[1], Zhengqi Geng[2], Zhichuan Niu[2], Chengao Yang[2], Ruijun Wang[1*], Siyuan Yu[1]

1.Sun Yat-sen University, China;2.University of Chinese Academy of Sciences, China

We present a GaSb–TFLN hybrid integrated laser operating in the 2-μm band. This laser achieves an output power of 3.6 mW, a side-mode suppression ratio of 60 dB, and a 33 nm tuning range.

17:30-17:45 · ACP2026-0701-181

Photonic Wire Bonding-Enabled Hybrid-Integrated Tunable Optical Transmitter for NG-PON2

Wentao Sun[1], Zhenxing Sun[1*], Rulei Xiao[1], Xiangfei Chen[1]

1.Nanjing University, China

A hybrid-integrated tunable transmitter combining a REC-based DFB laser array and TFLNMZM delivers 25 Gb/s NRZ operation. PWB provides low-loss laser-modulator-fiber interconnection, and clear open eye diagrams are obtained after back-to-back and 10 km SMF transmission.

17:45-18:00 · ACP2026-0701-119

Low-loss Wafer-scale 3D Polymer Photonic Inline Monitoring Chip for 7-core Fiber Transmission

Zexu Liu[1], Tao Chen[1], Zhenming Ding[1], Yuhao Fang[1], Zeyu Deng[1], Haojie Zhu[1], Weiqi Lu[1], Jiwei Xie[1], Xue Cheng[1], Shijie Ke[1], William Shieh[1*]

1.Westlake University, China

We demonstrate a wafer-scale 3D polymer inline monitor for 7-core-fiber links, featuring per-core spectral access without spatial demultiplexing, insertion loss of 2.1–4.0 dB, and transmission of 240-Gb/s per core without measurable BER penalty.

08:30-10:00 · November 3, 2026 · Tuesday

Heterogeneous integration for Quantum Photonics

Presider: Xingchen Ji, Shanghai Jiao Tong University, China

08:30-09:00 · ACP2026-0828-2 **Invited**

Integrated Photonics for Quantum Secure Applications

Marco Avesani[1,2*]

1.University of Padova, Italy;2.ThinkQuantum, Italy

Integrated photonics is transforming quantum-secure technologies by enabling compact, stable, and scalable platforms. We present experimental results on photonic integration for quantum key distribution and quantum random-number generation.

09:00-09:30 · ACP2026-0715-160 **Invited**

Integrated High Performance Single Photon Emitters in Nanogap/WSe2 Heterostructures

Hongbing Cai[1]

1.University of Science and Technology of China, China

Two-dimensional (2D) semiconductors single photon emitters (SPEs) have great potential in various light quantum technologies owing to their perfect collection efficiency. However, so far, various 2D-semiconductors SPEs are difficult to simultaneously fulfil a combination of high brightness, high stability, and excellent monochromaticity, due to challenges in single-frequency emitting, high intensity, and emitting stability. Here we present a feasible strategy that based on a controllable wrinkling technique, realizes simultaneously high brightness, high stability and excellent monochromaticity in a monolayer WSe2 nano-bulge SPE array with a designable and controllable local uniform large strain gradient. The SPEs exhibit exceptional performance in the SPE generation probability up to about 70% and possess high single-frequency brightness and excellent emitting stability. What's more, we show that nonradiative decay in 2D WSe2 quantum emitters can be electrically suppressed through charge depletion by utilizing dual gate configurations under a large electric field. In this condition, for site-controlled SPEs in WSe2 coupled to gold nanogaps, the SPE transition quantum efficiency after gating is increased to 76.4 ± 14.6% on average, with some SPEs reaching near-unity (more than 90%) quantum efficiency. Our innovative method represents a powerful generation and modulation method of SPEs in two-dimensional materials.

09:30-09:45 · ACP2026-0715-133

Nonlinear Frequency Conversion in a 4H-SiC Microring Resonator for Integrated Nonlinear and Quantum Light Sources

Jiantao Wang[1], Ng Ching Ting[1], Emer Kelleher-Smith[1], Andrew W. Poon[1*]

1.The Hong Kong University of Science and Technology, Hong Kong, China

4H silicon carbide is a promising platform for integrated nonlinear and quantum photonics because of its second- and third-order optical nonlinearities. In this work, we design and fabricate a silicon carbide microring resonator with modal phase-matching between telecom band and near-visible modes. We observe cavity-enhanced second-harmonic generation at ~775 nm wavelengths with an efficiency of ~22%/W pumping at ~1550 nm wavelength. Upon dual-wavelength pumping around ~1550 nm wavelength, we demonstrate sum-frequency generation together with two second-harmonic signals. We also observe four-wave-mixing-like sidebands in the telecom band, with generated idlers appearing at the microring resonances. These results demonstrate multiple cavity-enhanced second- and third-order frequency conversions in a single silicon carbide microring resonator and establish a basis for integrated quantum light sources.

09:45-10:00 · ACP2026-0701-137

Waveguide integrated superconducting single-photon detectors with near-unity detection efficiency

Ilya Stepanov[1*], Evgeniy Sergeev[1,2], Oksana Shmonina[1], Aleksey Kramarenko[1], Kirill Buzaverov[1,2], Sergey Avdeev[1,2], Aleksandr Baburin[1,2], Ilya Ryzhikov[1], Ilya Rodionov[1,2]

1.Bauman Moscow State Technical University, Russia;2.Dukhov Research Institute of Automatics (VNIIA), Russia

We demonstrate a technology for fabricating SNSPDs monolithically on a SiN photonic platform. Detectors have demonstrated absorption efficiencies of up to 99.8% and saturated intrinsic detection efficiency at 1550nm wavelength, ensuring near-unitydetection efficiency.

10:00-10:30 Coffee Break

10:30-12:00 · November 3, 2026 · Tuesday

Integrated Photonic Circuits for Optical Field Manipulation

Presider: Liu Liu, Zhejiang University, China

10:30-11:00 · ACP2026-0908-6 **Invited**

Integrated Visible-Light Photonic Circuits for Nonlinear and Free-Space Optics

Giovanni Pruiti[1], Marc Sorel[1*]

1.University of Glasgow, United States

We report on visible-light photonic integrated circuits built on loss-optimised silicon nitride and alumina waveguides. Demonstrations span on-chip wavefront sensing for free-space optics, and concurrent supercontinuum and second-harmonic generation via lithium niobate heterogeneous integration.

11:00-11:30 · ACP2026-0911-3 **Invited**

Supercontinuum Generation in Integrated Waveguide Platforms and Their Applications

Xingchen Ji[1]

1.Shanghai Jiao Tong University, China

Supercontinuum generation (SCG) in integrated waveguide platforms has emerged as a transformative technology for realizing broadband on-chip light sources, characterized by its compactness, stability, and energy efficiency. This report reviews our recent progress in SCG, with a specific focus on the performance and design of gallium phosphide and silicon nitride photonic platforms.

11:30-11:45 · ACP2026-0715-142

Integrated Photonic Wiener Operator with a Silicon Metalens 4F Processor

Chen Wu[1,2], Wenjia Zhang[1,2*], Zuyuan He[1,2]

1.State Key Laboratory of Photonics and Communications, Shanghai Jiao Tong University, China

We demonstrate the first Integrated Photonice Wiener operator in a waveguide-coupled on-chip 4F processor. Paired silicon metalenses and a Fourier-plane metasurface implement complex spatial-frequency filtering, showing excellent agreement (R^2=0.969) with scalar predictions.

11:45-12:00 · ACP2026-0715-58

Integrated Multiport Optical Vortex Beam Emitters

Liheng Yi[1], Hanwen Liu[1], Shuang Zheng[1*], Tiange Wu[1], Kaisheng Peng[2*], Minming Zhang[1*]

1.Huazhong University of Science and Technology, China;2.Wuhan Tri-light Technology Co., Ltd., China

Silicon multiport vortex emitters use waveguide crossings and fork gratings to form OAM beam arrays. Port choice and phase coding set beam position, enabling two-axis steering, spatial multiplexing, and links from chips to free space.

08:30-09:30 · November 4, 2026 · Wednesday

Heterogeneous integration of Electro-Optic Modulator

Presider: Hongtao Lin, Zhejiang University, China

08:30-08:45 · ACP2026-0701-21

Heterogeneously Integrated Slow-Light SiN-TFLN Michelson Interferometer Modulator with Inverse-Designed Reflectors

Wensheng Huang[1], Yuxin Hao[1], Zhengquan Jiang[1], Ningyu Zhang[1], Tianqi Song[1], Yan Cai[2], Jing Wang[1*]

1.Southern University of Science and Technology, China;2.Shanghai Institute of Microsystem and Information Technology, Chinese Academy of Sciences, China

We numerically investigate a heterogeneously integrated slow-light SiN-TFLN Michelson modulator with inverse-designed reflectors. Modeled on an MPW platform, the 0.3-mm-long device exhibits a simulated 0.55 V·cm half-wave voltage-length product and 50 GHz bandwidth.

08:45-09:00 · ACP2026-0706-2

A PZT Enabled LAN WDM Transmitter with Post Trimming and Efficient Pockels Modulation

Cunyu Shi[1], Chenlei Li[1], Tao Shu[1], Wei Chen[1], Yueyang Zhang[1], Feng Qiu[2], Daoxin Dai[1*]

1.Zhejiang University, China;2.Hangzhou Institute for Advanced Study, University of Chinese Academy of Sciences, China

We present a PZT-based LAN-WDM transmitter combining nonvolatile calibration and volatile Pockels modulation. Twelve channels showaverage 15.7dB crosstalk suppressionand 1.87 nm 0.5-dB flat-top bandwidth, with simulations indicating 100 Gbps per channel transmission.

09:00-09:15 · ACP2026-0715-85

Wafer-Scale Manufacturable Single-Drive Ultrahigh Extinction Ratio Electro-Optic Switch

Zhile Wu[1], Zhengyuan Bao[1], Changying Song[1], Zeyuan Xie[1], Daoxin Dai[1], Zejie Yu[1*]

1.Zhejiang University, China

We demonstrate a wafer-scale manufacturable single-drive electro-optic switch with nearly 60 dB extinction ratio, 1.5 dB insertion loss, and 2.92 ns switch timeacrossthe entireC band on a thin-film lithium tantalate platform.

09:15-09:30 · ACP2026-0715-172

High-Extinction-Ratio Thin-Film Lithium-Niobate Electro-Optic Modulator Enabled by Nonvolatile Sb_2Se_3 Programming

Jiahuan Chen[1], Ming Zhang[1*], Daoxin Dai[1]

1.Zhejiang University, China

High-extinction-ratio electro-optic modulators are essential for photonic systems requiring strong optical suppression, high dynamic range, and precise optical control. However, the extinction ratio of conventional Mach–Zehnder modulators is highly sensitive to fabrication-induced phase, loss, and power-splitting imbalances. These imperfections are typically compensated using thermo-optic or electrically controlled tuning elements, which require continuous heating power or sustained electrical bias to maintain the calibrated state. Here, we propose and experimentally demonstrate a nonvolatile Sb_2Se_3-assisted thin-film lithium-niobate electro-optic modulator based on a cascaded Mach–Zehnder architecture. A tapered Sb_2Se_3 phase-change-material (PCM) section is integrated on the Mach–Zehnder interferometer. By adjusting the nonvolatile state of Sb_2Se_3, fabrication-induced imbalance is compensated, enabling balanced of the subsequent traveling-wave Mach–Zehnder modulator. Once programmed, the calibrated state is retained without continuous thermal or electrical tuning. The fabricated device achieves a maximum extinction ratio of 46.5 dB and the electro-optic bandwidth of the modulator exceeds 60 GHz. The demonstrated electro-optic modulator holds significant potential for stable, broadband, and high-extinction-ratio modulators.

10:00-10:30 Coffee Break

10:30-12:00 · November 4, 2026 · Wednesday

Heterogeneous integration of Novel Materials

Presider: Hongtao Lin, Zhejiang University, China

10:30-11:00 · ACP2026-0617-1 **Invited**

Programmable Photonic Integrated Circuits Enabled by Phase-Change Materials

Yuru Li[1]

1.South China Normal University, China

Driven by the demands of artificial intelligence, this presentation highlights phase-change materials with nonvolatile and low-power operation, and reviews recent advances in programmable metasurfaces, on-chip optical routing, and programmable photonic devices.

11:00-11:30 · ACP2026-0714-31 **Invited**

Advances in integrated magneto-optics: beyond optical isolators

Shuyuan Liu[1*], Zhifeng Tu[1,2], Bingzhou Hong[1], Lei Bi[3], Wei Chu[1*]

1.Zhangjiang Laboratory, China;2.Fudan University, China;3.University of Electronic Science and Technology of China, China

Beyond isolators, integrated magneto-optical devices leverage nonreciprocity, nonvolatility, high-speed swtching, and endurance to unlock novel system architectures for next-generation optical switching and computing.

11:30-11:45 · ACP2026-0715-206

Integrated Magneto-Optical Circulators for Parallel FMCW LiDAR and Imaging Applications

Zixuan Wei[1], Wu Di[1], Zhenyuan Ren[1], Tianchi Zhang[1], Jun Qin[1], Bi Lei[1*]

1.University of Electronic Science and Technology of China, China

We demonstrate a thermally tuned four-channel integrated magneto-optical circulator array operating at 1550 nm and validate one channel in FMCW ranging, highlighting its potential for scalable parallel transmit-receive sensing.

11:45-12:00 · ACP2026-0626-14

Heterogeneous structure of Carbon Nanotubes and Silicon Nanobeam Cavity for Efficient Emission Coupling

Zijun Xiao[1], Weiwei Zhang[2], Carlos Ramos[1], Arianna Filoramo[3], Nicolas Dubreuil[4], Laurent Vivien[1*]

1.Paris Saclay University, France;2.Songshan Lake Materials Laboratory, Dongguan, China;3.CEA, France;4.LP2N, France

We demonstrate significant photoluminescence enhancement from semiconducting single-walled carbon nanotubes integrated into a silicon air-mode photonic crystal nanobeam cavity. Precise control over the spatial localization and alignment of the nanotubes is achieved through a dielectrophoresis-based fabrication process. Furthermore, our optimized photonic crystal cavity design achieves strong light-matter coupling and a low mode volume V=0.18(λ/n)3, which lead to the Purcell factor (FP=15000(λ/n)3), paving a way towards s-SWCNTs based integrated laser.

13:30-16:00 · November 4, 2026 · Wednesday

Integrated Silicon Nitride Photonic Circuits

Presider: Jingyi Tian, Westlake University, China

13:30-14:00 · ACP2026-0911-4 **Invited**

TBD

Xuechao Yu[1]

1.Suzhou Institute of Nano-tech and Nano-bionics, Chinese Academy of Sciences, China

TBD

14:00-14:30 · ACP2026-0819-1 **Invited**

The co-designed electro-optical (E/O) chips for the interconnects in AI Infrastructure

Jingbo Shi[1]

1.Beijing University of Posts and Telecommunications, China

Silicon photonics (SiPh) are being employed as an advanced platform, enabling low cost and high yield interconnects in AI Infrastructure. Here we report several recent progresses of co-designed photonic circuits (PICs) and electrical chiplets (EICs).

14:30-14:45 · ACP2026-0714-38

Deterministic Switching of Bright Soliton and Dark Pulse Microcombs within a Single-Ring Microresonator

Houling Ji[1,2], Yingge Tao[1,3], Zhaonian Wang[1], Yanhua Shen[1,3], Quanxin Na[1], Qijie Xie[1], Lei Wang[1], Chunyang Ma[1*], Perry Ping Shum[2*]

1.Pengcheng Laboratory, China;2. Southern University of Science and Technology, China;3.Harbin Institute of Technology, China

Here, we demonstrate a heater-free, fully passive structurally engineered approach to achieve on-demand switching between bright soliton and dark pulse microcombs within a single-ring microresonator on the complementary metal oxide-semiconductor-compatible, 300-nm-thick silicon nitride platform.

14:45-15:00 · ACP2026-0701-174

Ultralow-threshold near- to mid-infrared supercontinuum generation in nanophotonic suspended aluminum gallium arsenide waveguides

Luyao Fan[1], Guangzi Feng[2], Xiyue Zhang[2], Qiankun Li[3], Xueying Sun[3], Bing Xiong[1], Zhibiao Hao[1], Jian Wang[1], Lai Wang[1], Yanjun Han[1], Hongtao Li[1], Lin Gan[1], Jiyuan Zheng[1], Yi Luo[1], Long Zhang[2], Yuchen Wang[2*], Hairun Guo[3*], Changzheng Sun[1*]
1.Tsinghua University, China;2.Shanghai Institute of Optics and Fine Mechanics, Chinese Academy of Sciences, China;3.Shanghai University, China

Suspended aluminum gallium arsenide (AlGaAs) waveguides are tailored for ultralow-threshold near- to mid-infrared supercontinuum generation. An octave-spanning supercontinuum from 1280 to 2620 nm is generated at an on-chip pulse energy of only 20.3 pJ.

15:00-15:15 · ACP2026-0701-209

Experimental Demonstration of Thermo-Optic- and Carrier-Induced Optical Limit Cycles in Silicon Microring Resonators with Lateral Diodes

Menglong He[1], Weizhong Zhang[1], Abdou Shetewy[1], Kambiz Jamshidi[1]
1.TU Dresden, Germany

Silicon microring resonators with lateral p–i–n junctions are promising integrated photonic devices for nonlinear-optical applications because of their CMOS compatibility and strong optical nonlinearities. The interplay between thermo-optic and free-carrier effects can lead to nonlinear bifurcations and complex dynamical states, including optical limit cycles. Such dynamics are relevant to neuromorphic photonics, including photonic spiking neural networks and reservoir computing. Here, we experimentally demonstrate controllable optical limit cycles in a silicon-on-insulator microring resonator by varying the applied bias voltage and laser detuning, which modifies the intracavity power. At selected biases of 0 V, 1 V, and 5 V, under a fixed continuous-wave input power of approximately 6 dBm, we observe three dynamical regimes: self-pulsation at 24 kHz, self-pulsing oscillation at 80 MHz, and thermo–free-carrier oscillation at 2.4 GHz.

15:15-15:30 · ACP2026-0701-25

Polarization-Insensitive Si/SiN Thermo-Optic Switch with Power Tolerance Exceeding 335 mW

Ningyu Zhang[1], Tianqi Song[1], Jing Wang[1*]
1.Southern University of Science and Technology, China

We demonstrate a polarization-insensitive thermo-optic switch using Si/SiN hybrid phase shifters. The device features a low switching power of 32.7 mW, an extinction ratio over 15 dB, and a high-power tolerance exceeding 335 mW.

15:30-15:45 · ACP2026-0628-11

An Ultra-Low-Loss Dual-Layer (150/800-nm) Silicon Nitride Photonic Platform

Zhonghan Wu[1], Haiyan Jia[1], Xin Xu[1], Jiarui Zhang[1], Zhangjun Huang[1], Zhichao Ye[1]
1.Hangzhou Qoretek Co., Ltd., China

A monolithic dual-layer silicon nitride platform combines a 150-nm layer (Q ~1.15×10⁸, 0.26 dB/m) and an 800-nm layer (2.08 dB/m), linked by a ~12 m-dB interlayer coupler with wafer-scale uniformity.

15:45-16:00 · ACP2026-0701-28

Inverse-Designed Dual-Polarization Silicon Nitride Waveguide Crossing

Yuhang Hu[1], Ningyu Zhang[1], Tianqi Song[1], Jing Wang[1*]
1.Southern University of Science and Technology, China

We present an adjoint-optimized dual-polarization silicon nitride waveguide crossing. The 16.15 × 16.15 μm² device achieves low insertion losses (0.25 dB/0.35 dB) and peak crosstalk suppressions (-55 dB/-46 dB) for TE0/TM0 modes, respectively.

D3: Active Optoelectronic Devices

Conference Room 103C, 1F

13:30-15:30 · November 2, 2026 · Monday

Heterogeneous Integration and Integrated Photonics

Presider: Yu Han, Sun Yat-sen University, China

13:30-14:30 · ACP2026-0901-2 **Tutorial**

Heterogenious integration of active optoelectronic components on photonic integration platforms

Siyuan Yu[1]

1.Sun Yat-sen University, China

This tutorial will dicuss the technological approaches and commercial perspectives of heterogeneous integration of active optoelectroniccomponents such as modulators, detectors and lasers on photonic integration platforms including silicon andthin-film lithium niobate (TFLN) PICs.

14:30-15:00 · ACP2026-0622-2 **Invited**

Heterogeneously Integrated Thin-Film Lithium Niobate Modulators on Silicon Photonics platform

Yan Cai[1*]

1.SIMIT, China

Thin-film lithium niobate (TFLN) photonic integrated circuits (PICs) have demonstrated excellent electro-optic (EO) performance for high-speed optical communications. However, monolithic TFLN PICs still face challenges in passive components compactness, photodetection, and large-scale photonic integration. In this talk, we will present our recent progress on heterogeneously integrated TFLN EO modulators on the Silicon Photonics Platform and their applications for optical interconnect, coherent communication and optic gyroscope.

15:00-15:15 · ACP2026-0627-3

High-dimensional Mid-Infrared Computational Nanocrystal Photodetector

Yifan Chen[1], Tianhua Feng[2], Zhengyong Liu[1], Jingshun Pan[3], Mingjie Li[4], Zhaohui Li[1*]

1.Sun Yat-sen University, China;2.Jinan University, China;3.South China Normal University, China;4.The Hong Kong Polytechnic University, Hong Kong, China

We report a high-dimensional uncooled midinfrared photodetector based on ZnO/Sn-PbSe/PbS nanocrystal PIN heterojunctions. The device enables spectral and polarization reconstruction, achieving a superior spectral resolution of 3.24 nm and a polarization angular resolution of 2°.

15:15-15:30 · ACP2026-0629-30

High-Speed 1310-nm Modified Uni-Traveling-Carrier Photodetector with Diluted Waveguide Spot-Size Converter

Qifan Wang[1], Linze Li[1], Dingran Gu[1], Baile Chen[1*]

1.Shanghaitech University, China

We demonstrate a 1310-nm MUTC-PD with a diluted waveguide spot-size converter, achieving 157-GHz bandwidth, 0.46-A/W responsivity, and 0.15-dB PDL.

15:30-16:00 Coffee Break

16:00-17:15 · November 2, 2026 · Monday

Integrated Lasers and Photonic Devices

Presider: Siyuan Yu, Sun Yat-sen University, China

16:00-16:30 · ACP2026-0629-15 **Invited**

Monolithic integration of III-V lasers on SOI using selective lateral heteroepitaxy

Yu Han[1*]

1.Sun Yat-sen University, China

We demonstrate the selective lateral heteroepitaxy of InP membranes and buried QWs on (001) SOI wafers as well as the monolithic integration of III-V micro-cavity lasers and photodetectors on SOI.

16:30-16:45 · ACP2026-0701-38
Ge–Si Photodetector with Large Bandwidth and High Saturation Based on Hyperparameter Optimization
Jian Wang[1], Zijie Wang[1], Siyu Chen[1], **Guanyu Chen**[1*]
1.Chongqing University, China
Hyperparameter-optimized Ge-Si photodetectors are demonstrated for high-speed, high-power optical links. Joint optimization of dual Ge absorption, extended doping, and inductive peaking enables 0.94 A/W responsivity, 33.9 mA saturation current, and 44.3 GHz bandwidth under -3V.

16:45-17:00 · ACP2026-0701-151
A Room-Temperature Waveguide-Integrated Germanium-on-SOI Defect-mediated Photodetector for Mid-Infrared Sensing
Tianhui Hu[1*], Lauren Reid[1], Milos Nedeljkovic[1], Goran Mashanovich[1]
1.University of Southampton, United Kingdom
A waveguide-integrated defect-mediated photodetector based on Germanium-on-SOIis demonstrated at the methane absorption wavelength λ = 3.3 μm, with 0.34mA/W responsivity with no bias voltage. The photodetectors are monolithically fabricated and operate at room temperature.

17:00-17:15 · ACP2026-0701-163
A Waveguide-Integrated Graphene-Colloidal-Quantum-Dots-Graphene Heterostructure Photodetector operating at 2 μm
Leyi Hu[1,2], Hengtai Xiang[1,2], Jing Liu[3,4], Yujie Liu[3,4], Yiding Zheng[1,2], Junhuan Li[1,2], Liang Gao[3,4], Jingshu Guo[1,2*], Jiang Tang[3,4], Daoxin Dai[1,2]
1.State Key Laboratory of Extreme Photonics and Instrumentation, China;2.College of optical Science and Engineering, Zhejiang University, China;3.Wuhan National Laboratory for Optoelectronics and School of Optical and Electronic Information, China;4. Huazhong University of Science and Technology, China
We report a waveguide-integrated graphene-colloidal quantum dot-graphene (Gr-CQD-Gr) heterostructure photodetector designed for 2 μm short-wave-infrared detection. The device achieves a responsivity of 33 A/W, a dark current of 14 nA, and a noise-equivalent power of 0.4 pW/Hz$^{1/2}$.

08:30-10:00 · November 3, 2026 · Tuesday
Photodetectors and Infrared Optoelectronics
Presider: Lianping Hou, University of Glasgow, United Kingdom

08:30-09:00 · ACP2026-0626-21 **Invited**
Continuous Free Spectral Range Tuning in Optical Microresonators
Michael Sumetsky[1]
1.Aston University, United Kingdom
High-Q SNAP (Surface Nanoscale Axial Photonics) microresonators enable continuous free spectral range tuning via bending, translation, and rotation of intersecting and side-coupling optical fibers. Experimental results show excellent agreement with theoretical predictions.

09:00-09:30 · ACP2026-0831-5 **Invited**
Developments of Si-photonics based on group IV materials: from epitaxy to infrared optoelectronic devices
Chi Xu[1,2], Hui Cong[1,2], Chao Zhao[1,2], Chunlai Xue[1,2]
1.Institute of Semiconductors, Chinese Academy of Sciences, China;2.College of Material Science and Optoelectronic Technology, University of Chinese Academy of Sciences, China
In this talk, we reportour recent progress in CVD-based epitaxy of group-IV materials, including intrinsic/doped Ge and GeSn, as well as group-IV optoelectronic devices such as high-speed IR photodetectors and focal plane arrays.

09:30-09:45 · ACP2026-0715-149
PIN Diode-Integrated Silicon Microring Resonators for Reconstructive Optical Spectrum Analyzers
Ho Ming Ku[1], Ching Chi Kwan[1], Jiantao Wang[1], Chengyi Fan[1], Chin Cheung Kam[1], Hong Yuen Wong[1], Andrew W. Poon[1*]
1.HKUST, China
Datacenters and artificial-intelligence infrastructures rely on wavelength-division-multiplexed optical interconnects in the O-band near 1310 nm. There is a need for compact, distributed optical spectrum monitoring. We are in the progress of developing a reconstructive optical spectrum analyzer based on thermally tunable silicon microring resonator arrays integrated with an on-ring PIN junction. The micro-ring provides wavelength-selective resonant enhancement, while the PIN diode directly reads out the spectrally filtered optical signal as photocurrent. The wavelength-dependent photocurrent measured at multiple tuning states is used to construct a calibration matrix, from which an unknown input spectrum is recovered through non-negative least-squares reconstruction. In a preliminary measurement, the device produced an on-resonance current of approximately 0.1 uA at an optical input power of 7 dBm measured at 1295 nm under a PIN reversed bias of 5V. The completed experiments will quantify a reconstruction bandwidth of 2.5 nm, a spectral resolution of 0.3 nm, and a wavelength error of 0.2 nm of a single peak near 1295 nm.

09:45-10:00 · ACP2026-0715-25
High-Saturation Ge-Si Traveling-Wave Photodetector with Inductive-Load
Jian Wang[1], Zijie Wang[1], **Guanyu Chen**[1*]
1.Chongqing University, China
We demonstrate an eight-cell germanium-silicon traveling-wave photodetector with and without an on-chip inductor. At −5 V, it achieves 0.96 A/W responsivity, 180.66 mA 1-dB compression photocurrent, and 11–12 GHz 3-dB bandwidth for compact microwave-photonic applications.

10:00–10:30 Coffee Break

10:30-12:00 · November 3, 2026 · Tuesday
Photodetectors and Novel Materials
Presider: Michael Sumetsky, Aston University, United Kingdom

10:30-11:00 · ACP2026-0615-1 **Invited**
Monolithic Dual-Wavelength DFB Lasers for THz/MMW Signal Generation
Lianping Hou[1*]
1.University of Glasgow, United Kingdom
This talk reviews monolithic dual-wavelength DFB lasers for THz/MMW generation, highlighting advanced grating technologies, self-detected THz generation, and optical injection locking achieving ~1 Hz RF linewidth, enabling compact, low-cost, and highly coherent photonic sources.

11:00-11:15 · ACP2026-0701-2
Continuous Spatial Harmonic Engineering of Slow-Light TFLN Waveguides for Fabrication-Tolerant Velocity Matching
Yingfei Wan[1], Jifang Qiu[1], Yaqi Feng[1], Meican He[1], Jian Wu[1]
1.Beijing University of Posts and Telecommunications, China
Continuous spatial harmonic engineering is proposed for slow-light thin-film lithium niobate waveguides. A band-limited second-harmonic boundary suppresses lithography-induced distortion, reduces group-index drift, and maintains an estimated velocity-mismatch-limited 3-dB bandwidth above 100 GHz under 15-nm blur.

11:15-11:30 · ACP2026-0701-133
Ultra-Compact High-Power 60-μm-Pitch SOA Arrays with Shared Electrodes for Simultaneous Current Injection
Ying Liu[1], Yang Ke[2], Jianxin Wu[1], Ruijun Wang[1*], Siyuan Yu[1]
1.Sun Yat-sen University, China
We demonstrate 4- and 8-channel C-band SOA arrays with 60-μm pitch and shared electrodes for simultaneous injection. Peak per-channel output exceeds 18 and 16 dBm, with 0.5-dB variation. Total output exceeds 24, 25 dBm.

11:30-11:45 · ACP2026-0701-43
4 Channel Directly Modulated DFB Laser Array for 400Gb/s DR4 optical communications
Kai Kang[1,2], Longfei Zhang[1,2], Daibing Zhou[1,2], Song Liang[1,2*]
1. State Key Laboratory of Optoelectronic Materials and Devices, Institute of Semiconductors, Chinese Academy of Sciences, China;2. Center of Materials Science and Optoelectronics Engineering, University of Chinese Academy of Sciences, China
A4-channel directly modulatedInGaAlAs/InP MQW DFB laser arrayhas been fabricated. The lasers of the array have larger than 27 GHz modulation bandwidths.Clearly opened100 Gb/sPAM4eye diagrams can be obtainedfor both back-to-backand after 5 km of fiber transmission

11:45-12:00 · ACP2026-0713-9
Performance Uniformity Enhancement of III-V/Si_3N_4 Hybrid Laser Based on Broadband Bent Directional Couplers
Xinrong Jiang[1], Yihao Fan[1], Yifan Xia[1], Bohan Chu[1], Yuyao Guo[1,2*], Yu Li[1,2], Liangjun Lu[1,2], Jianping Chen[1,2], Linjie Zhou[1,2]
1.State Key Laboratory of Photonics and Communications, Department of Electronic Engineering, Shanghai Jiao Tong University, China;2.SJTU-Pinghu Institute of Intelligent Optoelectronics, China
We present a III-V/Si_3N_4 external-cavity laser employing broadband bent directional couplers to enhance performance consistency. The laser exhibits a uniform ~3-GHz FMCW bandwidth over a wide tuning range of 1470–1590 nm.

08:30-09:45 · November 4, 2026 · Wednesday

Lasers and Nonlinear Photonics

Presider: Ting Wang, Shanghai Jiao Tong University, China

08:30-09:00 · ACP2026-0823-1 **Invited**

Machine Learning-Assisted Smart Epitaxy of III-V Quantum Dots and Devices

Chao Zhao[1*]

1.Institute of Semiconductors, CAS, China

In this study, we propose a machine learning-assisted smart epitaxy method for III-V quantum dots that enables precise, dynamic adjustment of growth conditions, improving the optical and electrical characteristics of the devices.

09:00-09:15 · ACP2026-0701-26

L-band composite soliton rains in an NPR mode-locked erbium-doped fiber laser

Danyang Wang[1], Dongfang Jia[1*], Enfan Zhou[1], Yi Liu[1], Chunfeng Ge[1], Zhaoying Wang[1], Tianxin Yang[1]

1.College of Precision Instrument and Optoelectronics Engineering, Tianjin University, China

We report on an L-band composite soliton rain. Spectral slicing reveals its condensed state forms square-wave pulses, drifting state arises from conventional solitons and enhanced Kelly sidebands. And 2nd-4th harmonic soliton rains are also achieved.

09:15-09:30 · ACP2026-0701-169

Tunable electro-opto-mechanical oscillator based on Brillouin scattering in optical fibers

Haoran Xie[1], Yichun Li[1], Fufei Pang[1], Liang Zhang[1*], Soto Marcelo A.[2]

1.Shanghai University, China;2.Universidad Técnica Federico Santa María, Chile

A tunable electro-opto-mechanical oscillator based on Brillouin scattering is proposed and demonstrated. With help of tunability of backward stimulated Brillouin scattering, $R_{0,2}$ to $R_{0,19}$ ratio frequency signals can be selectively excited.

09:30-09:45 · ACP2026-0629-31

Back-illuminated MUTC-PD with 0.9 A/W Responsivity and 67 GHz Bandwidth

Xiaosong Ma[1], **Dingran Gu**[1], Linze Li[1], Baile Chen[1]

1.ShanghaiTech University, China;

This work, we demonstrate a back-illuminated InGaAs/InP MUTC-PD optimized for 1310-nm operation. Benefiting from a scaled device diameter and a SiO2-spacer-assisted interference-enhanced absorption structure [4], thedevice achieves 0.91 A/W responsivity at 1310 nm, 0.85A/W at 1550 nm, and measurement-limited 3-dB bandwidthsexceeding 67 GHz for 12-μm.

10:00-10:30 Coffee Break

10:30-12:00 · November 4, 2026 · Wednesday

Optical Communications and Modulation

Presider: Chao Zhao, Institute of Semiconductors, CAS, China

10:30-11:00 · ACP2026-0818-4 **Invited**

Femtojoule Optical Kerr Switching with Milliwatt-Peak-Power in Silicon-Organic Hybrid Nanocavity

Jing Xu[1*], Yizheng Chen[1]

1.Huazhong University of Science and Technology, China

We experimentally demonstrate a silicon-organic hybrid Kerr switch compatible with high-duty-cycle 40-Gbit/s signals, achieving error-free switching with 7.5-mW peak power and 63-fJ/bit energy through tight field confinement and high-nonlinearity polymer integration for ultrafast photonic processing.

11:00-11:30 · ACP2026-0818-7 **Invited**

QD Comb Laser Driven Optical Interconnects

Ting Wang[1*]

1.Shanghai Jiao Tong University, China

AI has boosted significant demand of high-performance computing (HPC). Existing electrical I/O is limiting the overall transmission bandwidth and latency of HPC, optical I/O appears to be excellent candidate of data links for next generation HPC. Here, we demonstrated optical interconnections with ultra-low powerconsumptionvia quantum dot comb laser integrated silicon photonic chip.

11:30-11:45 · ACP2026-0623-10

Integrated Optical Receiver for Terahertz Wireless Communication Over 100 GBaud

Yunhao Zhang[1], **Linshan Yang**[1], Yijun Guo[1], Yu Sun[2], Luyu Wang[3], Tianyu Long[3], Peng Yan[1], Jun Qin[2], Baile Chen[3], Lei Wang[4*], Haowen Shu[1*], Xingjun Wang[1*]

1.Peking University, China;2.Beijing Information Science and Technology University, China;3.ShanghaiTech University, China;4.Peng Cheng Laboratory, China

We demonstrate full-link-bandwidth all-optical receiving for terahertz wireless communication. Leveraging an ultrabroadband (S21200 GHz) receiver, we achieve a record-high single-channel wireless transmission of 120 Gbaud QPSK over a 4 m distance at 180 GHz carrier frequency.

11:45-12:00 · ACP2026-0701-45

A Silicon Mach-Zehnder Modulator with Time-Frequency Equalization Achieving a Bandwidth Exceeding 67 GHz

Yanxiang Lu[1], Erse Jia[2*], Weixiang Hu[2], Haibin Zhao[1], Haiwen Cai[2], Fenghe Yang[2*], Chu Wei[2*]

1.Fudan University, China;2.Zhangjiang Laboratory, China

An O-band silicon MZM with integrated on-chip time-frequency equalization and a differential-drive SS electrode achieves a bandwidth exceeding 67 GHz and supports 300 Gb/s PAM-8 transmission.

13:30-15:15 · November 4, 2026 · Wednesday

High-Speed Optical Interconnects

Presider: Yunhong Ding, Technical University of Denmark, Denmark

13:30-14:00 · ACP2026-0825-1 **Invited**

Optical Multilevel Eigenvalue Modulation for Nonlinear Fiber-Optic Transmission

Ken Mishina[1*]

1.The University of Osaka, Japan

This talk reviews advances in optical multilevel eigenvalue modulation based on the nonlinear Fourier transform, and presents our recent work on constellation design, neural-network demodulation, and long-haul transmission toward practical nonlinear-spectrum-based optical communication systems.

14:00-14:15 · ACP2026-0701-47

Impedance-Equalized Silicon MZM with 78 GHz Extrapolated Bandwidth for DSP-Free 224 Gb/s Transmission

Yanxiang Lu[1], Erse Jia[2*], Haiwen Cai[2], Haibin Zhao[1], Fenghe Yang[2*], Wei Chu[2*]

1.Fudan University, China;2.Zhangjiang Laboratory, China

An impedance-equalized MZM is designed and fabricated in a 200-mm silicon photonic platform, achieving a high efficiency of 1.3 V·cm, an extrapolated bandwidth of 78 GHz, and a transmission rate of 224 Gb/s without DSP.

14:15-14:30 · ACP2026-0712-3

144 Gbps Traveling-Wave-Electrode EML Based on Identical Epitaxial Layer Scheme for Data Center Interconnects

Zhaozhuo Wang[1], Changzheng Sun[1*], Bing Xiong[1], Jian Wang[1], Zhibiao Hao[1], Lai Wang[1], Yanjun Han[1], Hongtao Li[1], Lin Gan[1], Yi Luo[1]

1.Tsinghua University, China

A traveling-wave electrode electroabsorption modulated laser (TWE-EML) based on an identical-epitaxial-layer (IEL) structure is proposed for data center interconnects. Clear eye-opening at 72 GBaud PAM4 is demonstrated after 10 km SSMF transmission.

14:30-14:45 · ACP2026-0715-26

A Gain-Controllable Broadband Transimpedance Amplifier for over 100-GBaud PAM4 Receivers

Yuming Zhao[1], Xin Zhang[1], Linsheng Zhong[2, 3], Sunningchang Zhang[1], Chengxuan Ye[1], Shenmao Zhang[1], Xiaoxiao Dai[1*], Qi Yang[1], Deming Liu[1]

1.Huazhong University of Science and Technology, China;2.Research Institution of Generic Technology for Integrated Circuit, China;3.Trustservice Technology Co.,LTD, China

We present a gain-controllable broadband TIA for over 100-GBaud PAM4 optical receivers. It achieves 24.75-dB gain, 33.87 GHz 3-dB and 53.96 GHz 10-dB bandwidths, 2.02 mV output noise, and 19.15-dB tuning range, enabling robust high-dynamic-range optical interconnects.

14:45-15:00 · ACP2026-0714-41

A CSV-to-BGA Vertical Transition Design on an LTCC Substrate for High-Speed 2.5D CPO Interconnects

Chi Zhang[1], Jiaxin Zheng[1], Jianyu Shi[1], Jie Shi[1], Shuo Jiang[1], Jun Qin[1*]

1.Key Laboratory of Information and Communication Systems, Ministry of Information Industry, Beijing Information Science and Technology University, China

We propose a differential CSV-to-BGA vertical transition on an LTCC substrate for 2.5D CPO. The design achieves 70 GHz bandwidth, Sdd11 below -15 dB , and a 173.0 mV eye height at 224 Gbps PAM4.

15:00-15:15 · ACP2026-0715-103
High-Gain Mid Wavelength Infrared UTC-HPT with Gradient Doped InGaAsGaAsSb T2SL
Ming Liu[1,2], **Mingxin Yao**[1], Ya Su[1], Zichong Ma[1], Yaqi Zhao[1], Hongyue Hao[3*], Xiaoning Guan[1*], Pengfei Lu[1]
1.School of Integrated Circuits, Beijing University of Posts and Telecommunications, China;2.China Electronics Technology Group Co.,Ltd., China;3.Institute of Semiconductors,Chinese Academy of Sciences, China
This paper proposes an n-p-n uni-traveling-carrier heterojunction phototransistor (UTC-HPT) for mid-wavelength infrareddetection based on a type-II superlattice composed of InGaAs and GaAsSb. The device consists of a gradient-doped InAlAs emitter, a gradient-doped InGaAs/GaAsSb type-II superlattice base, step-graded InGaAlAs transition layers, an InAlAs collector, and an InAlAs subcollector. At 150 K, the spectral responsivity, dark and illuminated collector current-voltage characteristics, responsivity, and small-signal current-gain cutoff frequency are analyzed and and compared across four structures with different emitter and base doping profiles. In the two-terminal mode at an incident wavelength of 3.752 micrometers and a collector voltage of 2 volts, the proposed device achieves a responsivity of 233.80 amperes per watt and a dark-current density of approximately 0.0132ampere per square centimeter. Assuming unity photoelectric conversion efficiency, the lower-bound optical gain estimated from the responsivity is 77.3. In the three-terminal mode at a collector voltage of 2 volts and a base voltage of 0.35 volts, the small-signal current-gain cutoff frequency reaches 67.65 gigahertz. These results indicate that the dual-gradient doping scheme for the emitter and base provides the best overall performance, enhancing photocurrent amplification while maintaining a high three-terminal small-signal current-gain cutoff frequency.

15:30-16:00 Coffee Break

16:00-17:15 · November 4, 2026 · Wednesday
Integrated Photonics Applications and Devices
Presider: Ken Mishina, The University of Osaka, Japan

16:00-16:30 · ACP2026-0708-2 **Invited**
Reconfigurable integrated photonic circuit for quantum entanglement generation, manipulation and purification
Yonghe Yu[1], Leif K. Oxenløwe[1], **Yunhong Ding**[1,2*]
1.Department of Electrical and Photonics Engineering (DTU Electro), Technical University of Denmark, Denmark;2.SiPhotonIC ApS, Denmark
Quantum entanglement is one of the key resources for future quantum computing and communication technologies. Here, we present our latest results on quantum entanglement generation, manipulation and purification based on integrated photonic circuits.

16:30-16:45 · ACP2026-0701-203
Coated near 8.5 μm quantum cascade laser frequency combs for mid-infrared free-space heterodyne links
Xinkai Liu[1,2], Yuzhe Lin[1], Feng Xu[1,2], Haohang Cheng[1,2], Mingshuo Ren[1,3], Wanhua Zheng[1,2,4*]
1.Laboratory of Solid-State Optoelectronics Information Technology, Institute of Semiconductors, Chinese Academy of Sciences, China;2.College of Materials Science and Opto-Electronic Technology, University of Chinese Academy of Sciences, China;3.School of Electronic, Electrical and Communication Engineering, University of Chinese Academy of Sciences, China;4.College of Future Technology, University of Chinese Academy of Sciences, China
We demonstrate coated near-8.5 μm quantum cascade laser frequency combs with low dispersion, broad multimode emission, sub-kHz RF beatnotes, and matched repetition-frequency offsets, establishing device-level readiness for future mid-infrared free-space dual-comb heterodyne links.

16:45-17:00 · ACP2026-0630-74
Integrated Lithium Niobate Acousto-optic Frequency Comb
Xinyan Fu[1], Daoxin Dai[1], Zejie Yu[1*]
1.State Key Laboratory of Extreme Photonics and Instrumentation, Zhejiang Key Laboratory of Optoelectronic Information Technology, College of Optical Science and Engineering Zhejiang University, China
We demonstrate an acousto-optic frequency comb on a non-suspended TFLN platform, generating high-order sidebands up to the 25th order and realizing an 11-line flat-top comb via a cascaded electro-optic modulator.

17:00-17:15 · ACP2026-0630-80
A high-speed on-chip graphene bolometer with the folded waveguide structure
Junhuan Li[1], Tiannan Han[2], Yiding Zheng[1], Zhekai Zhu[1], Leyi Hu[1], Laipeng Ma[2], Jingshu Guo[1*], Wencai Ren[2], Daoxin Dai[1]
1.State Key Laboratory of Extreme Photonics and Instrumentation, College of Optical Science and Engineering, Zhejiang University, China;2.Shenyang National Laboratory for Material Science, Institute of Metal Research, Chinese Academy of Sciences, China
A waveguide-integrated graphene bolometer with folded waveguide is demonstrated, with responsivity of 0.29 A/W and noise-equivalent power of 75.1 pW/Hz$^{0.5}$. It achieved a cutoff bandwidth exceeding 67 GHz and reception of 80 Gbps NRZ signals.

D4: Passive Photonic Components Across Domains

Conference Room 102A, 1F

13:30-15:30 · November 2, 2026 · Monday

Passive Photonic Components Across Domains (1)

Presider: Victor Torres Company, Chalmers University of Technology, Sweden

13:30-14:30 · ACP2026-0911-5 **Tutorial**

Asymmetry-enabled Silicon Photonics

Daoxin Dai[1,2], Yiwei Xie[1]

1.Zhejiang University, China; 2.China Jiliang University, China

Silicon photonics has been developed successfully, including various passive and active photonic devices as well as large-scale photonic integrated circuits. This tutorial focuses on asymmetric silicon photonics enabled by structural asymmetry, including high-performance passive and active devices as well as photonic chips for various applications.

14:30-15:00 · ACP2026-0701-91 **Invited**

Integrated Optical Phased Arrays for Next-Generation Solid-State Beam Steering

Yong Liu[1*], Zhenli Dong[1], Hao Hu[1]

1.Technical University of Denmark, Denmark

Integrated optical phased arrays enable solid-state beam steering for LiDAR, free-space optical communications. This talk reviews major architectures, compares performance tradeoffs, and discusses future directions toward practical, wide-field-of-view, low-loss, high-efficiency, scalable, manufacturable optical phased array.

15:00-15:15 · ACP2026-0630-15

Dispersion-Enhanced Metalens via Synergistic Modulation of Broadband Phase and Group Delay

Ruixin Lu[1*]

1.Xi'an University of Posts and Telecommunications, China

To boost semiconductor inspection speed, we propose a metalens as the core dispersive element in a miniaturized spectral confocal system. Simulations show it achieves 38.3-μm axial dispersion over 480–650 nm while maintaining focus quality.

15:15-15:30 · ACP2026-0714-34

Dispersion-Compensating Metasurface for Optical Communication

Feng Liu[1], Lei Liu[1], Zhicheng Jin[1], Puzhen Yuan[1], Weiqi Lu[1], Mingke Jin[1], Heming Wang[1], Jingyi Tian[1], William Shieh[1*]

1.Westlake University, China

We propose and fabricate the first dispersion-compensating metasurface (DCMS) for optical fiber communication. With the DCMS, we successfully demonstrate 50-Gbaud PAM-4 IMDD transmission over 2-km SSMF, recovering near-B2B transmission performance and improving the receiver sensitivity by 1.3 dB.

15:30-16:00 Coffee Break

16:00-17:45 · November 2, 2026 · Monday

Passive Photonic Components Across Domains (2)

Presider: Yong Liu, Technical University of Denmark, Denmark

16:00-16:30 · ACP2026-0911-10 **Invited**

Heterogeneous/Hybrid Silicon Photonics for Next-Generation Information Technologies

Lin Chang[1]

1.Peking University, China

Silicon photonics technology, owing to its tremendous advantages in large-scale integration, is widely regarded as a key technology for future data communications, precision measurement, quantum information, and other fields. However, current mainstream silicon photonic platforms, limited by the properties of silicon materials, suffer from significant limitations in device performance and diversity, greatly restricting their applications. This presentation will introduce our team's work on heterogeneous integration in silicon photonics, in which multiple material systems have been integrated on a silicon photonic platform through various integration approaches. The presentation will showcase the integration of ultra-narrow-linewidth lasers and optical frequency combs, as well as applications of heterogeneous integration in microwave photonics.

16:30-16:45 · ACP2026-0701-22
Ultra-Compact Silicon Reflective Arrayed Waveguide Gratings Enabled by Inverse Design
Mengxi Cui[1], Tianqi Song[1], Jing Wang[1*]
1.Southern University of Science and Technology, China
This work demonstrates the first silicon reflective arrayed waveguide gratings (AWGs) using inverse-designed reflectors. The 1.6-nm and 3.2-nm devices exhibit around -15 dB crosstalk, while the 0.8 nm AWG achieves -8.4 dB, validating WDM functionality.

16:45-17:00 · ACP2026-0630-25
Compact, Low-Loss Grabowski Hybrid Bend in Silicon Nitride Photonic Waveguides for O-Band
Changxing Yang[1], Jinglei Qin[2], Qian Wang[2], Lei Zhang[1*]
1.Beijing University of Posts and Telecommunications, China;2.Beijing Yandong Microelectronics Co.,Ltd., China
We demonstrate a compact and low-loss Grabowski hybrid waveguide bend operating in the O-band on a 300 nm thick silicon nitride (Si_3N_4) photonic platform. For an effective bend radius of 30 μm at a wavelength of 1310 nm, wafer-level measurements yield an ultra-low bending loss of 3.06 ± 0.50 mdB per 90° bend.

17:00-17:15 · ACP2026-0629-10
Multidimensional Topological Control of Vortex Beams Enabled by Rotationally Stacked Triple-Fork Gratings
Duanduan Wu[1*], Lu Liu[1], Jiayang Yuan[1]
1.Ningbo University, China
A femtosecond-written chalcogenide-glass rotationally stacked triple-fork grating exploits structural symmetry for 5D vortex control (three charges, two angles). C3/C6-breaking converts scanning into classification, programming petal patterns and networks for mid-infrared structured light.

17:15-17:30 · ACP2026-0715-8
Reflection-Matrix-Guided Hybrid Inverse Design of Low-Index-Contrast Multimode Reflectors
Yuxin Hao[1], Yicheng Wang[1], Wensheng Huang[1], Tianqi Song[1], Ningyu Zhang[1], Jing Wang[1*]
1.Southern University of Science and Technology, China
We propose a hybrid inverse design framework guided by a reflection matrix for compact multimode reflectors. Validated on silicon nitride and lithium niobate platforms, the approach enhances reflection, suppresses crosstalk, and mitigates fabrication spectral shifts.

17:30-17:45 · ACP2026-0715-88
High Extinction Ratio 2 × 2 Silicon MZI Switch Using a Chamfered MMI Coupler
Ting Liu[1], Tongxin Yang[1], Xinkuo Yu[1], Conghao Zhuang[1], Haotian Zhu[1], Yayun Xu[1], Lei Zhang[2], Hengying Xu[1*], Chenglin Bai[1*]
1.Liaocheng University, China;2.Beijing University of Posts and Telecommunications, China
We propose straight-cut chamfered 2×2 MMI splitter to suppress scattering & phase errors. It achieves <0.2 dB excess loss/splitting imbalance over C-band, enabling MZI switch with 45 dB ER at 1550 nm.

13:30-15:45 · November 3, 2026 · Tuesday
Passive Photonic Components Across Domains (3)
Presider: Lan Li, Westlake University, China

13:30-14:30 · ACP2026-0911-6 **Tutorial**
Ultralow-loss silicon nitride integrated photonics: advances and applications
Victor Torres Company[1]
1.Chalmers University of Technology, Sweden
I will give an overview of recent advances in silicon nitride waveguides with losses below the decibel per meter, and enabling applications in efficient microcombs, parametric oscillators and lasers.

14:30-15:00 · ACP2026-0911-8 **Invited**
TBD
Junqiu Liu[1]
1.Shenzhen International Quantum Research Institute, China
TBD

15:00-15:30 · ACP2026-0908-9 **Invited**
Meter-Scale Chirped Bragg Gratings Based on Ultra-Low-Loss Silicon Nitride
Chao Xiang[1*]
1.The University of Hong Kong, Hong Kong, China
We demonstrate meter-long chirped spiral Bragg gratings on an ultra-low-loss silicon nitride platform. The device provides a 10-nanosecond group delay and high-fidelity on-chip electro-optic comb pulse compression.

15:30-15:45 · ACP2026-0630-57
Symmetric Passive Silicon Nitride Photonic Integrated Circuit with High Polarization Extinction Ratio Optimized for Interferometric Fiber Optic Gyroscope
Quang Huy Pham[1], The Khai Chu[1], Thi Vien Tran[1], Nguyen Hung Tran[1], Huu Vinh Nguyen[1*]
1.Viettel Semiconductor Center, Vietnam
This work presents a compact, fully symmetric SiN PIC corefor high-performance IFOGs, integrating twoTE-pass polarizers and MMI couplers, achieving 8.52 dB maximum IL, PER 38.2 dB at 1550 nm, and broadband signal purity.

15:45–17:30 Coffee Break & Poster Session

08:30-09:30 · November 4, 2026 · Wednesday
Passive Photonic Components Across Domains (4)
Presider: Qiancheng Zhao, Southern University of Science and Technology, China

08:30-09:00 · ACP2026-0908-2 **Invited**
Recent advances in programmable photonics
Jose Capmany[1*]
1.Valencia Polytechnic University, Spain
This talk will review the recent advances in programmable photonics including non-uniform and low power consumption waveguide meshes, parallel WDM architectures and novel applications in physics and computing.

09:00-09:15 · ACP2026-0715-179
Broadband and Compact Silicon Mode Exchanger Enabling Simultaneous Even- and Odd-Mode-Pair Swapping
Jiacheng Li[1], Ming Zhang[1*], Daoxin Dai[1]
1.Zhejiang University, China
We propose a compact silicon metasurface-assisted mode exchanger swapping TE_0TE_2, TE_1TE_3. Optimized via PSO and 3D-FDTD, it achieves low loss and crosstalk, verified by simulations and experiments for multimode circuits.

09:15-09:30 · ACP2026-0630-108
Compact Mode Multiplexer/Demultiplexer Based on Folded Multi-Plane Light Conversion
Zhanhong Wen[1], Zhibing Liu[2*], Yan Li[1*], Zhaohui Li[1*]
1.Sun Yat-sen University, China;2.Hefei University of Technology, China
We propose a compact folded MPLC mode MUX/DEMUX. A mirror doubles effective modulation stages; dual-pass adjoint optimization achieves 1.26 dB loss and −22 dB crosstalk with halved physical planes.

10:00–10:30 Coffee Break

10:30-12:00 · November 4, 2026 · Wednesday
Passive Photonic Components Across Domains (5)
Presider: Hao Hu, Technical University of Denmark, Denmark

10:30-11:00 · ACP2026-0625-8 **Invited**
Tantalum Pentoxide Third-order Nonlinear Integrated Photonics
Qiancheng Zhao[1*]
1.Southern University of Science and Technology, China
Tantalum pentoxide has strong mode confinement, large Kerr nonlinearity and Brillouin gain, and excellent robustness against temperature or power fluctuations, which renders it well-suited for third-order nonlinear integrated photonic circuits and applications.

11:00-11:30 · ACP2026-0911-9 **Invited**
Integrated Cavity Optomechanical Ultrasonic Sensors
Beibei Li[1]
1.Institute of Physics, Chinese Academy of Sciences, China
We demonstrate wafer-scale fabrication of integrated cavity optomechanical ultrasonic sensors with optical Q factors reaching 10^7 and nanopascal-level sensitivity (nPa/√Hz), alongside a compact FPGA-based measurement system enabling both underwater ultrasonic imaging and photoacoustic gas sensing.

11:30-11:45 · ACP2026-0715-51
Wavelength-Insensitive Microrings with Artificial Gauge Field Couplers in the O-Band
Zhaonian Wang[1], Houling Ji[1], Yingge Tao[1], Yanhua Shen[1], Quanxin Na[1], Qijie Xie[1], Chunyang Ma[1*], Lei Wang[1*]
1.Pengcheng Laboratory, China
Wavelength-insensitive microrings enabled by artificial gauge field areachieved on a300-nm thick SiN platform. The AGF coupler and microring realizea stable 10% coupling coefficient and maintainextinction ratios above 5.6dB across the O-band.

11:45-12:00 · ACP2026-0629-11
Polymer-Loaded LNOI Long-Period Waveguide Grating with Tunable Wavelength and Contrast for Reconfigurable Optical Filtering
Jiayao Deng[1]
1.University of Electronic Science and Technology of China, China
We propose and experimentally demonstrate a tunable polymer-loaded long-period waveguide grating on lithium niobate on insulator platform, which requires no etching of the lithium niobate layer. The fabricated device achieves a high rejection contrast of 26.2 dB and a narrow 3-dB bandwidth of 26.46 nm at 1566.8 nm. Through electro-optic (EO) and thermo-optic (TO) control, it offers efficient EO wavelength tuning of 0.38 nm/V, contrast modulation of 0.74 dB/V, and TO tuning of 0.6 nm/°C. The combination of straightforward fabrication and robust reconfigurability makes this grating a promising building block for integrated photonic signal processing.

13:30-15:30 · November 4, 2026 · Wednesday
Passive Photonic Components Across Domains (6)
Presider: Xinhao Li, Westlake University, China

13:30-14:00 · ACP2026-0701-83 **Invited**
Physics-informed data-driven modeling of thermal crosstalk in interferometer meshes
Isidora Teofilovic[1], Darko Zibar[1], Francesco Da Ros[1]
1.Technical University of Denmark, Denmark
Interferometer meshes enable optical matrix-vector multiplication, but thermal crosstalk limits scalability. Purely data-driven models achieve good accuracy yet generalize poorly across devices. By embedding thermal-diffusion physics, physics-informed data-driven models enhance generalizability while ensuring physical plausibility.

14:00-14:15 · ACP2026-0701-55
3D-Printing-Assisted Fiber Arrangement Optimization for Low-Loss Six-Mode-Group Selective Photonic Lanterns
Xiaokang Zhong[1], Cong Zhang[1*], Yuwen Qin[1], Songnian Fu[1]
1.Guangdong University of Technology, China
To overcome structural randomness in photonic lantern (PL) fabrication, we demonstrate a 3D-printing-assisted fiber arrangement method for six mode PL fabrication, achieving mode selective excitation of LP_{01}, LP_{11}, LP_{21} and LP_{02} with insertion loss less than 0.8 dB (1.7~2.0 dB for LP_{02}) over the C-band.

14:15-14:30 · ACP2026-0715-21
Mechanism and Fabrication of Helical Fiber Gratings in Strongly-Coupled Four-Core Fibers
Jiaming Chen[1], Jiajing Tu[2*]
1.Dept. of Electronic Engineering , Jinan University, China;2.Dept. of Electronic Engineering, School of Inf. Science and Technology, Jinan University, China
We investigate the mechanism and fabrication of helical fiber gratings based on strongly-coupled four-core fiber (SC-FCF). This work aims to simultaneously generate multiple orders of orbital angular momentum (OAM) modes in the cladding through an SC-FCF helical grating. In the theoretical simulation, angular momentum matching conditions are applied to determine the cladding modes that can be coupled from the core supermodes, and phase matching conditions are employed to reveal the quantitative relationship between the twist rate and the target high-order OAM modes. In the experiment, the sixth- and seventh-order OAM modes are simultaneously generated in the SC-FCF helical grating using the electric arc discharge method. Finally, the generated OAM mode orders are successfully verified by off-axis digital holography.

14:30-14:45 · ACP2026-0715-42
Femtosecond-laser-inscribed active tilted fiber gratings as monolithic gain polarizers for compact ultrafast fiber lasers
Kyriacos Kalli[1*]
1.Cyprus University of Technology, Cyprus
We present multifunctional active fiber gratings fabricated by femtosecond laser inscription, integrating optical amplification and polarization-selective filtering within erbium-doped fiber. The monolithic architecture enables nonlinear polarization rotation mode locking without discrete polarizers, reducing cavity complexity while improving robustness, integration, and scalability for ultrafast fiber laser systems.

14:45-15:00 · ACP2026-0701-148

Ultra-Low Loss Few-Mode Nested Elliptical Tube Hollow-Core Anti-Resonant Fiber

Wenzhe Chang[1], Lipeng Feng[1], Anxu Zhang[1], Xishuo Wang[1], Xiaoli Huo[1]

1.China Telecom Research Institute, China

We propose a nested elliptical-tube few-mode HC-ARF supporting six modes. At 1550 nm, the fundamental mode loss is 1.36×10^{-4} dB/km, highest-order mode loss is 9.51×10^{-3} dB/km, the bending loss is <0.1 dB/km at 3 cm.

15:00-15:15 · ACP2026-0715-13

CNN-Assisted Real-Time Alignment Monitoring of Hollow-Core Fiber and SingleMode Fiber

Eryang Liu[1], Lei Zhang[2,3], Zhaohui Li[4,5], Jiajing Tu[1*]

1.Department of Electronic Engineering, Jinan University, China;2.State Key Laboratory of Optical Fiber and Cable Manufacture Technology, China;3.Yangtze Optical Fiber and Cable Joint Stock Limited Company, China;4.School of Electronics and Information Technology and Guangdong Provincial Key Laboratory of Optoelectronic Information Processing Chips and Systems, China;5.Sun Yat-sen University, China

We propose a neural-network-assisted monitoring method that performs real-time mode decomposition from the near-field intensity image at the HCF output using a multi-task learning network (MTL-SCU). The LP$_{01}$ purity serves as a quantitative alignment metric. Experiments on 15~m and 2~km HCFs validate the method: in the short fiber, purity is highly sensitive to misalignment, making it suitable for laser delivery applications; in the long fiber, purity should be combined with power monitoring. The approach achieves millisecond-level prediction and raises LP$_{01}$ purity above 0.99.

15:15-15:30 · ACP2026-0715-38

Strongly enhanced circular dichroism near anti-crossing in chiral single-ring PCF

Xinyang Liu[1*], Sibnath Dey[1], Xinglin Zeng[1], Ruochen Yin[1], Xin Jiang[1], Philip Russell[1]

1.Shanghai Institute of Optics and Fine Mechanics and Hangzhou Institute of Optics and Fine Mechanics, China

We report experimental results on strongly enhanced circular dichroism (CD) in helically twisted single-ring photonic crystal fibre close to an anti-crossing wavelength. The CD is confirmed to change sign for opposite twists.

15:30-16:00 Coffee Break

16:00-17:00 · November 4, 2026 · Wednesday

Passive Photonic Components Across Domains (7)

Presider: Isidora Teofilovic, Technical University of Denmark, Denmark

16:00-16:15 · ACP2026-0715-139

Multichannel Mode Converter Using Amplitude-Sampled Tapered LPFG in Few-Mode Fiber

Yi Luo[1], Siyu Chen[1], Xiaolong Fan[1], Li-Ao Zuo[1], Chengbo Mou[1], Yunqi Liu[1*]

1.Shanghai University, China

We propose a tapered amplitude-sampled LPFG in FMF. Rectangular sampling enables multi-resonance, achieving 17 LP_{01}–LP_{21} conversion channels at 10% duty cycle as compact all-fiber multiplexers for high-capacity communications.

16:15-16:30 · ACP2026-0629-3

Switching wave linear-wave interaction in a pulsed-driven fibre Fabry-Pérot resonator

Shengbo Xu[1,2], Stuart Murdoch[1,2], Yiqing Xu[1,2*]

1.University of Auckland, New Zealand;2.The Dodd-Walls Centre for Photonic and Quantum Technologies, New Zealand

We present a study of switching-wave linear-wave interaction in a normal-dispersion resonator under pulsed driving. The phase-matching frequency of the generated idler wave can be determined using the phase-matching equation, including temporal desynchronization.

16:30-16:45 · ACP2026-0715-84

On-Chip Thermal Mapping of Battery Hotspots Using A Quasi-Distributed Photonic Approach

Haomin Wang[1], Yingchun Wu[1], Kangjian Bao[1], Zongxi Li[1], Xu Yang[1], Yuting Ye[1], Zequn Chen[1], Wei Zhang[2], Hongtao Lin[3], Lan Li[1*]

1.Zhejiang Key Laboratory of 3D Micro/Nano Fabrication and Characterization, Department of Electronic and Information Engineering, School of Engineering Westlake University, China;2.Faculty of Electrical Engineering and Computer Science Ningbo University, China;3.College of Information Science and Electronic Engineering Zhejiang University, China

An integrated photonic chip with quasi-distributed temperature sensing is validated under simulated battery thermal conditions, resolving thermal gradients and hotspots to address the need for high-resolution operando monitoring in high-energy-density Li-ion batteries under fast charge-discharge.

16:45-17:00 · ACP2026-0715-128

Fabrication-Tolerant Narrow-Waveguide Directional Couplers on a 400-nm-Thick Silicon Nitride Platform

Haoran Shi[1], Yiyun Shen[2], Junqi Yao[1], Xucheng Zhang[1], Yu He[1], Guohua Huang[2], Qianqian Wang[2], Xiabo Chen[2], Yikai Su[1*]
1.Shanghai Jiao Tong University, China;2.Hangzhou Brighten Core Optoelectronics Co., Ltd., China

Narrow-waveguide silicon nitride directional couplers with small gaps show reduced fabrication sensitivity and good simulation–measurement agreement, verified by modal analysis, FDTD simulations, and experiments.

N1: Network, System and Service Innovations

Conference Room 102B, 1F

13:30-15:30 · November 2, 2026 · Monday

AI Native Optical Network and Emerging Fiber Systems

Presider: Yuan Cao, Nanjing University of Posts and Telecommunications, China

13:30-14:30 · ACP2026-0817-3 **Tutorial**

AI Native Functionality in Optical Networks

Daniel Kilper[1]

1.Trinity College Dublin, Ireland

This tutorial will examine recent research on using AI in the control and operation of optical networks and consider the challenges in moving to a fully AI native approach.

14:30-15:00 · ACP2026-0713-10 **Invited**

Standardization Progress of Hollow-core Fiber and Its System Applications in ITU-T: From Technical Debates to GSTR.hcf

Dawei Ge[1*], Dong Wang[1], Dechao Zhang[1], Chao Han[2], Jing Li[3], Fang Li[2]

1.China Mobile Research Institute, China;2.China Academy of Information and Communications Technology, China;3.Yangtze Optical Fibre and Cable Joint Stock Limited Company, China

This paper reviews the current standardization progress of hollow-core fiber (HCF) in ITU-T SG15, analyzing key technical debates on categorization, properties, application-driven variants, interoperability, and the path to the GSTR.hcf technical report.

15:00-15:15 · ACP2026-0701-225

Continual Event Recognition for Autonomous Optical Network Monitoring

Khouloud Abdelli[1*]

1.Nokia Bell Labs, Germany

Autonomous optical networks require monitoring systems that adapt to evolving disturbances without retraining. We propose a continual SOP event recognition framework combining open-set detection, prototype registration, and compositional reasoning, achieving 99.82% accuracy and continual adaptation.

15:15-15:30 · ACP2026-0622-6

Non-invasive Identification of Hollow-Core Fiber Type and Propagation Direction via Evanescent-Field Analysis

Yuqian Zhang[1], Dechao Zhang[1], Dawei Ge[1*], Dong Wang[1], Mingqing Zuo[1], Han Li[1*]

1.Department of Fundamental Network Technology, China Mobile Research Institute, China

We propose a low-complexity, non-invasive evanescent-field detection scheme for hollow-core fibers, enabling identification of leaky-field intensity, nested structures, and propagation direction. Results reveal strong dependence on fiber structure and propagation modes, supporting characterization and sensing.

15:30-16:00 Coffee Break

16:00-17:30 · November 2, 2026 · Monday

Quantum Optical Networks and Performance Monitioring

Presider: Bingli Guo, Beijing University of Posts and Telecommunications, China

16:00-16:30 · ACP2026-0624-8 **Invited**

Large-Scale Quantum Key Distribution Networking: Toward Space-Ground Integration

Yuan Cao[1*]

1.Nanjing University of Posts and Telecommunications, China

This talk presents recent research on large-scale quantum key distribution (QKD) networking, including satellite-based QKD networking and multi-protocol QKD networking, and discusses future trends toward space-ground integrated QKD networks.

16:30-17:00 · ACP2026-0908-8 **Invited**

Emulating Quantum Data Centers: From Distributed Circuits to Fiber-Interconnect Noise

Rui Lin[1*]

1.Chalmers University of Technology, Sweden

We will introduce quantum data centers and distributed quantum computing, then a practical emulation framework for evaluating remote gates, distributed algorithms, and fiber-interconnect noise on real quantum hardware, connecting network impairments with application-level performance.

17:00-17:15 · ACP2026-0715-71 **Industry Innovation Nomination**

Online Scheduling of Path-Coupled Key for Heterogeneous Services in Optical Satellite Networks

Ruikang Ni[1], Wei Wang[1], Liyazhou Hu[2], Lian Meng[3], Yongli Zhao[1*], Jie Zhang[1]

1.Beijing University of Posts and Telecommunication, China;2.Shenzhen Polytechnic University, China;3.Beijing University of Technology, China

Physical-layer key generation supplies link-local keys but suffers intermittent, path-coupled availability. We propose an SLA-aware online scheduler integrating credit allocation, reservation, and virtual queues, reducing security-sensitive PLKG-support miss rates from 94.2% to 50.3% in simulation.

17:15-17:30 · ACP2026-0715-59

Optical Power Monitoring Integrated with Wavelength Selective Switch Enabled by Nonuniform Beam Splitting and Low-Crosstalk Hologram Design

Xinghua Wang[1,2], Suresh Chejarla[2,3], Tonghui Ji[2], Ning Deng[2*], Fan Li[1], Yuyao Wang[2]

1. Sun Yat-Sen University, China;2. Great Bay University, China;3.Shenzhen International Graduate School, Tsinghua University, China

This paper presents a simple and integrated optical power monitor based on a novel small-portion power-splitting method for wavelength selective switches (WSSs). A redistributed iterative Fourier transform algorithm (R-IFTA) is proposed and experimentally demonstrated to achieve efficient power splitting with low crosstalk in a 1×20 WSS setup.

08:30-10:00 · November 3, 2026 · Tuesday

Optical Wireless Communication Networks

Presider: Wei Wang, Beijing University of Posts and Telecommunications, China

08:30-09:30 · ACP2026-0625-1 **Tutorial**

High-performance receivers for optical wireless communication

Ton Koonen[1]

1.Institute for Photonic Integration, Eindhoven University of Technology, Netherlands

High-speed receivers capturing optical beams are vital in high-capacity optical wireless communication systems. Concepts for large aperture, wide Field-of-View, high energy efficiency and bandwidth are discussed, for various short-reach indoor and medium-to-long reach outdoor applications.

09:30-09:45 · ACP2026-0715-72

Weather-Adaptive Routing for Latency-sensitive Service in Satellite Networks with RF/Laser Links

Zijian Cui[1], Wei Wang[1], Chenwei Zhang[1], Xin Li[1], Yongli Zhao[1*], Jie Zhang[1]

1.Beijing University of Posts and Telecommunications, China

Weather-induced degradation of hybrid RF/FSO satellite-to-ground links can cause congestion when latency-sensitive (LS) and non-latency-sensitive (NLS) services compete for limited downlink resources. The proposed WA-RA prioritizes low-delay routing for LS services and redirects NLS traffic to feeder satellites with higher residual capacity.

09:45-10:00 · ACP2026-0715-110

LSTM-Enhanced MADDPG for Congestion-Aware Routing in Hybrid FSO/RF LEO Satellite Networks

Li Xu[1], Chengyue Lou[1], **Tingwei Wu**[1*], Ruijie Zhu[2], Hui Yang[2], Lei Guo[1]

1.Chongqing University of Posts and Telecommunications, China;2.Beijing University of Posts and Telecommunications, China

This paper proposes an LSTM-MADDPG routing framework for hybrid FSO/RF LEO satellite networks, using a temporal encoder to exploit traffic history. Results show 24.1% higher delivery and 21.6% lower delay over MADDPG under medium load.

10:00-10:30 Coffee Break

10:30-12:15 · November 3, 2026 · Tuesday

Space Optical Transport Networks

Presider: Tingwei Wu, Chongqing University of Posts and Telecommunications, China

10:30-11:00 · ACP2026-0904-7 **Invited**

Challenges and Opportunities for Building a Space Optical Transport Backbone in Dynamic Satellite Networks

Wei Wang[1], Yongli Zhao[1], Jie Zhang[1]

1.Beijing University of Posts and Telecommunications, China

Space optical transport networks are envisioned as a key infrastructure for future global broadband and space-ground integrated services. This talk discusses dynamic topology abstraction, predictive routing, resilient optical resource orchestration, and autono-

mous control. Anemulation platform demonstrates the feasibility of the proposed architecture and significant gains in service continuity and resource utilization.

11:00-11:30 · ACP2026-0904-3 **Invited**

Hybrid Free-Space Optical and Microwave Transmission: Fused Architecture and Enhanced Phase-Noise Resilience

Yejun Liu[1*]

1.Chongqing University of Posts and Telecommunications, China

In this work, we focus on the challenges of hybrid free-space optical and microwave systems in structural complexity and transmission robustness. We propose and demonstrate experimentally a fused architecture with enhanced phase-noise resilience.

11:30-11:45 · ACP2026-0715-204

Submarine Cable Protection Based on Space–Ground SRLG in Optical Networks

Chunjv zhang[1], Yongli Zhao[1*], Wei Wang[1], Linhao Zhang[1], Yansong Fu[1], Jie Zhang[1]

1.Beijing University of Posts and Telecommunications, China

We build a space-ground SRLG from a forward earthquake model and monthly cloud climatology, and configure SG-SDP, a 1+1 protection whose satellite backup stays SRLG-disjoint, lifting availability to 70.3% across 20 real hubs.

11:45-12:00 · ACP2026-0715-86

Predictive On-Board PEP Activation and Handover Optimization for TCP Goodput in Mega-LEO Optical Satellite Constellations

Yikai Liu[1], Bingli Guo[1*], Yu Zhou[1], Tong Liu[1], Luozhang Liang[1], Shanguo Huang[1]

1.Beijing University of Posts and Telecommunications, China

We propose a workflow that predictively activates performance-enhancing proxies and optimizes their operation.Results show that it improves average TCP goodput by up to 56.78% over existing methods in mega-LEO optical satellite networks.

12:00-12:15 · ACP2026-0715-171

Masked Proximal Policy Optimization for Task Offloading in Satellite Networks with In-orbit Computing Capability

Danish Kumar[1], Wei Wang[1*], Kamlesh Kumar Soothar[2], Jie Zhang[1]

1.Beijing University of Posts and Telecommunications, China;2.Beihang University, China

Low Earth Orbit (LEO) mega-constellations are increasingly used as orbital edge-computing platforms, where tasks from a terrestrial network are offloaded to satellites across the globe. Choosing which satellite serves each task is hard due to constant orbital motion changes the reachable set continuously, constellations difference in speed and altitude, and per-satellite queues link each decision to future performance. Existing deep reinforcement learning (DRL) methods mostly leverage on synthetic connectivity and few baselines. We present a realistic, reproducible benchmark driven by real CelesTrak/SGP4 data across a ten-station global network and three heterogeneous constellations (Starlink, OneWeb, Iridium), modeling queueing, latency, energy, and deadline constraints in real units. Our proposed agent couples a masked PPO learner with reward shaping, normalization, and task-conditioned features, enforcing reachability by construction. Over five seeds against ten baselines, including a strong one-step oracle, it reaches 76\% task success, surpassing learning baselines (DQN, QR-DQN, A2C, PPO) while matching the strongest heuristic and approaching the oracle.

08:30-10:00 · November 4, 2026 · Wednesday

Semantic and DCI Optical Networks

Presider: Nan Hua, Tsinghua University, China

08:30-09:30 · ACP2026-0908-7 **Tutorial**

Semantic Optical Communications: From Bits to Task-Relevant Data

Andrea Bianco[1*]

1.Politecnico di Torino, Italy

Semantic optical communications focus on task-relevant information rather than bit-by-bit data transfer. This tutorial discusses transceiver and network design, channel modelling, and performance metrics from a task-oriented perspective, as well as future research opportunities for intelligent network services.

09:30-09:45 · ACP2026-0715-116

MASC-FEI: A Multi-Agent Sensing-Computing Collaborative Mechanism for Fiber Event Identification in DCI Networks

Wei Chen[1,2], Zhiqun Gu[1,2*], Yi Ding[3,4], Shuai Ren[5], Jiawei Zhang[1,2], Yuefeng Ji[1,2*]

1.State Key Laboratory of Information Photonics and Optical Communications, China;2.Beijing University of Posts and Telecommunications, China;3.China Telecom Research Institute, China;4.State Key Laboratory of Optical Fiber and Cable Manufacture Technology, China;5.Information Support Force Engineering University, China

We propose a multi-agent sensing-computing collaborative mechanism (MASC-FEI) for fiber event identification in data center interconnect networks. MASC-FEI reduces sensing data volume by 67.28% while maintaining accuracy under a confidence threshold of 0.92.

09:45-10:00 · ACP2026-0715-164
CoFlexPipe: Compute-Network Co-Design for Efficient LLM Training over Heterogeneous Cross-DC Optical Networks
Chunyuan Zhao[1], Xiaofang Gao[2], Xin Li[1*], Tong Lin[2], Yang Wen[2], Zhidong Wu[2], Yongli Zhao[1]
1.Beijing University of Posts and Telecommunications, China;2.State Grid Information & Telecommunication Center, China
We propose CoFlexPipe, a compute-network co-design scheme that optimizescross-DC pipeline execution for large language model (LLM) training over optical transport networks. Simulations show up to 44.1% lower training time under heterogeneity and runtime disturbances.

10:00-10:30 Coffee Break

10:30-12:00 · November 4, 2026 · Wednesday
AI-assisted Optical Network
Presider: Xinhao Li, Westlake University, China

10:30-11:00 · ACP2026-0626-4 **Invited**
Rethinking Perceptual Data for Autonomous Optical Networks: A Spectral-Space Digital Twin Perspective
Nan Hua[1,2*], Tianyu Liang[3], Jiaxi Li[4], Xiaodong Liang[5], Qingsong Luo[5], Xiaoping Zheng[1,2]
1.Department of Electronic Engineering, Tsinghua University, China;2.Beijing National Research Center for Information Science and Technology (BNRist), China;3.School of Information Science and Technology, Beijing University of Technology, China;4.School of Computer, Electronic and Information, Guangxi Key Laboratory of Multimedia Communications and Network Technology, Guangxi University, China;5.Guangxi Key Laboratory of Optical Network and Optical Information Security, The 34th Research Institute of China Electronics Technology Group Corporation, China
This paper evaluates perceptual data requirements for digital twin optical networks. By balancing hardware precision and deployment cost under a /good-enough/ criterion, intelligent processing reduces the impact of physical layer impairments, supporting automated control.

11:00-11:30 · ACP2026-0630-44 **Invited**
Optical Amplifier Placement Reoptimization in Elastic Optical Networks with Hybrid HCF-SSMF Links
Mingyu Weng[1], Guangxing Song[1], Huichao Xu[1], Pengfei Cai[1], Tingyu Fu[1], Wei Sun[2], Mingyi Gao[1], Yongcheng Li[1*], Gangxiang Shen[1]
1.Soochow University, China;2.Jiangsu Alpha Optic-Electric Technology Co., Ltd., China
We investigate optical amplifier placement reoptimization in elastic optical networks (EONs) with hybrid hollow-core fiber (HCF) and standard single-mode fiber (SSMF) segments on a single transmission link. Two candidate-site-based EDFA placement reoptimization strategies are proposed to reduce redundant EDFAs while maintaining acceptable spectrum efficiency.

11:30-11:45 · ACP2026-0715-111
AI Agent Assisted Time Error Compensation for End-to-End Synchronization in Hybrid Fiber-Wireless Networks
Di Lu[1], Hongxing Li[1], Hao Ma[2], Lei Yao[3], Pengfei Wang[3], Yiping Ren[3], Wen Ying[3], Guochu Shou[1]
1.Beijing University of Posts and Telecommunications, China;2.Signal & Communication Research Institute, China Academy of Railway Sciences Co., Ltd., China;3.China Star Network Digital Technology Co., Ltd, China
Precise time synchronization forms the foundation of intelligent and automated societies. To mitigate the impact of wireless air interface delay jitter on synchronization accuracy in hybrid fiber-wireless networks, this paper proposes an error compensation method based onAIagent. Experimental results demonstrate that this approach reduces end-to-end time error to within the microsecond range.

11:45-12:00 · ACP2026-0715-92
Idle-Aware and Carbon-Efficient Stage Placement Scheme for Hybrid-Parallel LLM Training across Optical-Interconnected AIDCs
Mengtong Guo[1], Xin Li[1*], Yongli Zhao[1], Tingting Bao[1], Jie Zhang[1]
1. Beijing University of Posts and Telecommunications, China
This paper proposes a carbon-aware hybrid-parallel training scheme for large language models over geo-distributed AIDCs, jointly optimizing pipeline stage placement and optical network resources to reduce carbon emissions while satisfying training latency constraints.

N2: Photonics for Data Center and Computing Systems

Conference Room 103A, 1F

13:30-15:30 · November 3, 2026 · Tuesday

Optical Interconnect and Integration

Presider: Meng Xiang, Guangdong University of Technology, China

13:30-14:30 · ACP2026-0903-4 **Tutorial**

Optical Interconnects for Cloud and AI Data Centers

Chongjin Xie[1]

1.PhotonicX AI, Singapore

This tutorial presents optical interconnect technologies in data centers, driven by explosive bandwidth demands first from cloud and then from AI computing. Both intra- and inter-data center optical interconnects are described.

14:30-14:45 · ACP2026-0701-141

1.6 Tb/s OSFP-XD Transceiver Based on Silicon Photonic Integrated Circuit

Du Lei[1], Yiran Wei[1], Yan Yi[1*], Haiwei Cai[1*], Chu Wei[1*]

1.Zhangjiang Laboratory, China

We demonstrate a 1.6 Tb/s (4×400G) FR4 silicon photonic WDM pluggable optical module in OSFP-XD transceiver. A novel multi-wavelength light-source solution and advanced high-frequency, high-density packaging techniques are employed to achieve low power consumption, low cost, and mass producibility. The fabricated module successfully passes full 400G-FR4 conformance tests, exhibiting clear optical eye diagrams and error-free transmission, thereby confirming the feasibility of silicon photonics for next-generation 1.6 Tb/s interconnects.

14:45-15:00 · ACP2026-0715-65

Metric-Driven Device-to-Link Electro-Photonics Co-Design for 106.25-Gb/s PAM4 Optical Interfaces

Jue Gong[1], Shaoliang Yu[1], Xiaolan Wang[1*]

1.Zhejiang Lab, China

This paper presents a metric-driven end-to-end electro-photonics co-design workflow applicable to LPO/NPO/CPO. As an example, Transmitter and Dispersion Eye Closure Quaternary (TDECQ) and its equalizer penalty are used to optimize MZM electrode length.

15:00-15:30 · ACP2026-0515-1 **Invited**

Optoelectronic Integrated Information Sensing and Chips

Sha Zhu[1*]

1.Nankai University, China

Integrated optoelectronic sensing technology has emerged as a key development direction for next-generation ubiquitous sensing systems. In this talk, we will present our recent advances in integrated optoelectronic sensing technologies and chip-scale implementations.

15:30-17:30 Coffee Break & Poster Session

08:30-10:00 · November 4, 2026 · Wednesday

Optical Switch for AI Infra

Presider: Wei Wang, Beijing University of Posts and Telecommunications, China

08:30-09:00 · ACP2026-0715-62 **Invited**

Liquid Crystal Devices for AI Computing

Haining Yang[1*]

1.Southeast University, China

This talk will give an overview of a wide range of liquid crystal photonic devices for AI data centr

09:00-09:15 · ACP2026-0715-192

An 8 x 8 High-Speed MZI Optical Switch with a Scalable Board-Level Driver

Yu Zhou[1], Wei Gao[1], Xin Li[1], Liangjun Lu[1,2*], Linjie Zhou[1,2], Jianping Chen[1,2]

1.State Key Laboratory of Photonics and Communications, School of Information Science and Electronic Engineering, Shanghai Jiao Tong University, China;2.SJTU-Pinghu Institute of Intelligent Optoelectronics, China

We demonstrate an 8×8 silicon photonic MZI switch with scalable board-level driving: 14 parallel SIPO lanes load the 112-bit switch state,enabling low-crosstalk routing across all 64 paths and 20-Gb/s transmission through a configured link.

09:15-09:30 · ACP2026-0630-124
RailBridge: A Sparse Optical Bridging Architecture for Multi-Tenant GPU Training Clusters
Xiaorun Wang[1], Jun Dai[1], Xingde Li[1], Zheng Yang[1], Kexiong Fang[1], Zhiqun Gu[1], Jiawei Zhang[1*]
1.Beijing University of Posts and Telecommunications, China
Rail-optimized GPU clusters provide high bandwidth for LLM training by preserving communication locality within servers and rails. However, maintaining a fully shared electrical spine for the relatively small amount of cross-rail traffic incurs substantial uplink cost. Spine-less designs such as Rail-only forward the relatively small amount of cross-rail traffic through the HBI, making them highly cost-efficient when communication locality is preserved. However, multi-tenant placement fragmentation and GPU failures can introduce persistent cross-rail traffic that competes with native intra-server communication on the HBI. We propose RailBridge, a sparse optical bridging architecture that selectively restores inter-rail connectivity through an optical circuit switching (OCS) layer. RailBridge offloads dominant cross-rail traffic from the HBI, reducing the iteration time overhead relative to a full shared spine from 17.3% to 6.6% while requiring only one-quarter of the shared-spine uplink bandwidth.

09:30-10:00 · ACP2026-0911-11 **Invited**
Building Hybrid Optical/Electrical Data Center Networks for AI
Shizhen Zhao[1]
1.Shanghai Jiao Tong University, China
The rapid growth of large-scale AI training and inference workloads places unprecedented demands on datacenter network bandwidth, flexibility, and cost, pushing conventional electrical fat-tree fabrics toward their limits. Hybrid optical–electrical datacenter networks, which use optical circuit switches (OCS) to reconfigure physical topologies, have recently moved from lab-scale research into production. However, adopting OCS faces fundamental challenges: limited one-to-one switching flexibility, millisecond-to-second-scale reconfiguration latency, and a mismatch between existing AI training/inference stacks and OCS fabrics.

This work presents the design and end-to-end systemization of hybrid optical–electrical switching for AI computing. Drawing on production lessons that made OCS reliable by design, we aim to build a full-stack solution that seamlessly integrates the entire pipeline—OCS, optical transceivers, switch/NIC coordination for fast switching, collective communication libraries, and AIOps for operation and maintenance—delivering a practical, scalable path toward next-generation AI datacenter fabrics.

10:00–10:30 Coffee Break

10:30-12:00 · November 4, 2026 · Wednesday
Photonic AI Computing
Presider: Liangjun Lu, Shanghai Jiao Tong University, China

10:30-11:00 · ACP2026-0701-64 **Invited**
Digital Optical Multiplication for High-Precision Photonic AI Computing
Deming Kong[1], Pierre Nay[1], Xiaojing Long[1]
1.Technical University of Denmark, Denmark
We present our recent works on optical binary multiplication toward high-fidelity generative tasks. With amultidimensional encoding scheme, the digital computing architecture offersa route to overcome precision limits in analog photonic computing.

11:00-11:15 · ACP2026-0715-29
Programmable Photonic In-Memory Accelerator with Ultrafast Optical I/O
Tao Shu[1], Chenlei Li[1], Yueyang Zhang[1], Cunyu Shi[1], Wei Chen[1], Daoxin Dai[1*]
1.Zhejiang University, China
We demonstrate a programmable thin-film PZT photonic in-memory accelerator integrating ultrafast optical I/O with non-volatile weight storage. A 16-channel microring array implements four convolutional kernels after non-volatile resonance alignment and weight programming, producing convolution waveforms with R^2 values above 0.98. Under 10-GHz operation, hardware-aware training improves the measured classification accuracy from 67% to 87%.

11:15-11:30 · ACP2026-0701-80
Hardware-Aware Training Based on Structural Re-parameterization for Optical Convolutional Neural Networks
Zheng Li[1], Yongmei Sun[1*], Ruijia Guo[1]
1.Beijing University of Posts and Telecommunications, China
Hardware imperfections in MZI arrays hinder ONN training, while batch normalization remains difficult. We propose structural re-parameterization-based hardware-aware training, improving trainability on CIFAR-10 under finite loss compensation and achieving 27.5% higher accuracy than single-branch training.

11:30-12:00 · ACP2026-0627-1 **Invited**

Low-Phase-Noise Optical Frequency Division for Photonic Computing and Data-Center Clocking

Xiaopeng Xie[1*]

1.Peking University, China

This talk reviews our recent advances in optical frequency division using EO combs, Kerr microcombs, and femtosecond fiber combs for generating ultrastable, low-phase-noise microwave clocks enabling photonic computing, coherent interconnects, and AI data-center systems.

13:30-15:30 · November 4, 2026 · Wednesday

Optical AI Architecture and Network

Presider: Xiao Lin, Fuzhou University, China

13:30-14:30 · ACP2026-0724-1 **Tutorial**

Toward All-Optical AI Fabrics for Sustainable Distributed Intelligence in ION-2030

Raul Munoz[1]

1.CENTRE TECNOLÒGIC DE TELECOMUNICACIONS DE CATALUNYA (CTTC), Spain

Artificial Intelligence is driving the evolution of optical networks toward Optical AI Fabrics. This paper introduces a three-phase roadmap, architectural principles, and enabling technologies for deterministic, scalable, and sustainable infrastructures supporting distributed intelligence within the ION-2030 vision.

14:30-14:45 · ACP2026-0626-23

All-Optical Network Coding Enabled Collective Communication Using Multi-Agent DRL over Geo-distributed DC Networks

Xin Wang[1*], Fansong Kong[1]

1.Beijing Information Science and Technology University, China

We propose a multi-agent DRL-based all-optical network coding algorithm for GPU ALLGATHER over geo-distributed DC networks (MA-NCGA), enabling dynamic coding-node selection, routing, and resource allocation for asynchronous GPU communication with significantly reduced bandwidth usage while maintaining transmission completion time.

14:45-15:00 · ACP2026-0716-9

Joint In-Network Storage and Transfer Scheme for Wide-Area Pipeline Parallelism in OCPN

Xiao Lin[1*], **Ziang Feng**[1], Haoyuan Zheng[1], Zuqi Teng[1], Weiling Lu[1], Enguo Chen[1*]

1. Fuzhou University, China

To address computation–communication mismatches, we propose joint in-network storage and transfer (JIST), a slack-aware scheme combining GCN-based routing-potential prediction with deterministic store-and-forward search to reduce blocking probability and computation time under massive payloads.

15:00-15:30 · ACP2026-0901-4 **Invited**

PRON: A Low-Latency Periodically Reconfigurable Network Tailored for AI Pre-training

Fulong Yan[1*]

1.Beijing University of Posts and Telecommunications, China

To address the challenges of high concurrency traffic during large model training, PRON employs a two-layer optical network and optimizes topology configuration, resulting in a 35% reduction in latency and a 20%-30% cost saving.

15:30-16:00 Coffee Break

16:00-17:30 · November 4, 2026 · Wednesday

Photoics for AI and Computing

Presider: Yuxin Xu, Zhejiang University of Technology, China

16:00-16:30 · ACP2026-0629-24 **Invited**

Opportunities and Challenges: The Future Outlook of Pluggable Optical Modules in AI Data Centers

Hao Liu[1*], Xia Sheng[1], Yuyang Liu[1], Auxu Zhang[1], Kai Lv[1], Xiaoli Huo[1]

1.China Telecom Research Institute, China

This paper reviews the pluggable optical modules evolution, advantages andcomparisons with other technology, thus having a clear and viable path to continued development in optical interconnection applicationsfor the AI era.

16:30-17:00 · ACP2026-1022-1 **Invited**

Multicast Routing Algorithms with Store-and-Forward in Space Division Multiplexing Elastic Optical Networks

Xu Zhang[1]

1.Chongqing University of Posts and Telecommunications, China

Space-division multiplexing elastic optical networks (SDM-EONs) have been proposed to interconnect data centers. To address the massive data transmission demands between these centers, we introduce a multicast routing algorithm based on the time-shifted multi-layer graph (TS-MLG) in SDM-EONs. This algorithm not only alleviates spectrum fragmentation and inter-core crosstalk (IC-XT) but also facilitates the efficient convergence of storage and network functions. Simulation results show that, compared to benchmark algorithms, our proposed solution significantly reduces the blocking probability of traffic requests and enhances overall network throughput.

17:00-17:15· ACP2026-0630-128

TOE-Map: Joint Thermal, Optical, and Electrical-aware Task Mapping for ONoCs

Zhongjie Mao[1]

1.Beijing University of Posts and Telecommunications, China

This paper proposes TOE-Map, a multi-objective task-mapping method that jointly considers thermal, optical, and electrical characteristics. Experimental results show TOE-Map lowers peak temperature and temperature standard deviation, shortens execution time, and improves traffic-weighted optical SNR.

17:15-17:30 · ACP2026-0715-41

Deep photonic reservoir computing based on lithium niobate microring resonators

Zhuoling Feng[1], Yixian Dong[1*], Xihua Zou[1], Wei Pan[1], Lianshan Yan[1]

1.Southwest Jiaotong University, China

We investigate the performance of lithium niobate microrings in deep reservoir computing. Driven by competitive thermo-optic and photorefractive effects, the cascaded system yields a 0.00117 SER (channel equalization) and a 0.0028 NMSE (MG prediction).

N3: Optical Network Architectures, Control and Management

Conference Room 102C, 1F

13:30-15:00 · November 2, 2026 · Monday
AI Agents and Autonomous Optical Network Control
Presider: Ning Deng, Great Bay University, China

13:30-14:00 · ACP2026-0618-4 **Invited**
Designing a Multi-Agentic AI-Based Control Plane for Transport Networks
Luis Velasco[1*], Pol Gonzalez[1], Sima Barzegar[2]
1.Universitat Politecnica de Catalunya, Spain;2.Barcelona Supercomputer Center, Spain
We propose a multi-agentic AI-based control plane architecture for transport networks operation. Agents collaborate through the A2A protocol and access external tools, including SDN control, through MCP. Three workflows areexperimentally assessed on a test-bed.

14:00-14:15 · ACP2026-0630-51
A Self-Evolving Harness Engineering Framework for LLM Agents in Autonomous Optical Networks
Qizhi Qiu[1,2], Yihao Zhang[1], Xiaomin Liu[1], Jingyi Su[1], Weisheng Hu[1], Qunbi Zhuge[1*]
1.Shanghai Jiao Tong University, China;2.Monash University, Australia
We propose a self-evolving framework updating AI agents' skills in optical networks. It enhances a Qwen3-8B agent to achieve 2.85× improvement, outperforming >1000B Qwen3-max and ~200B GPT-4o, empowering locally deployed agent-driven AONs with continuous evolution.

14:15-14:30 · ACP2026-0623-2
LLM-Driven Multi-Agent Optical Digital Twin for Automated Data Generation
Sen Shen[1], Zhuojun Cai[1], Jing Han[1], Wanxin Zhao[1], Peiyun Ge[1], Yiran Teng[1], **Shuangyi Yan**[1*], Dimitra Simeonidou[1]
1.University of Bristol, United Kingdom
We propose a multi-agent autonomous framework for optical-network data generation, integrating LLM orchestration with GNPy and OptiCommPy to automate scenario expansion, iterative physical-layer analysis, and closed-loop optimisation for intelligent next-generation optical networks at scale efficiently.

14:30-15:00 · ACP2026-0715-165 **Invited**
Toward the Right Abstraction Level for AI Agents Controlling Optical Networks
Dmitrii Briantcev[1*], Daniel Kilper[1], Merim Dzaferagic[1]
1.Trinity College Dublin, Ireland
We study how the control-interface abstraction exposed to a language-based agent affects its ability to operate an optical network, arguing that safer, more efficient agentic control comes from better abstractions rather than finer device control.

15:30-16:00 Coffee Break

16:00-17:30 · November 2, 2026 · Monday
Optical Data Centers and Distributed AI Training
Presider: Yongcheng Li, Soochow University, China

16:00-16:30 · ACP2026-0904-6 **Invited**
AI-Enabled Evolution of All-Optical Switching From 1.0 to 2.0
Liangjia Zong[1*]
1.Huazhong University of Science and Technology, China
All-optical switching is a key component for future intelligent computing networks. This talk focuses on integrating AI technologies with it to evolve the current 1.0 era to 2.0, supporting future computing network evolution demands.

16:30-16:45 · ACP2026-0630-49
Hollow-Core Fiber for Cross-Data-Center AI Training: A Performance Study with Deep Reinforcement Learning Optimization
Zixin He[1], Shan Yin[1*], Shikui Shen[2], Mengru Cai[1], Xiaodong Liu[1], Shanguo Huang[1]
1.Beijing University of Posts and Telecommunications, China;2.China Unicom Research Institute, China
With rapid growth of large-scale AI models, cross-data-center distributed training becomes critical yet highly latency-sensitive. Hollow-core fiber (HCF), leveraging air-core light transmission with near-vacuum propagation speed and ultra-high bandwidth, significantly reduces communication delay. Simulation results show lower task blocking and training latency, further improved by reinforcement learning-based scheduling.

16:45-17:00 · ACP2026-0715-150
Lightpath Provisioning for Pipeline-Parallel Training in Dragonfly-Based All-Optical Data Center Networks with Distributed Small-Scale MEMS Optical Switches
Peng Zhou[1], Guangfa Liu[1], Xinglong Zou[1], Liwei Zhu[1], Mengqi Wei[1], Yongcheng Li[1*]
1.Soochow University, China
This paper investigates lightpath provisioning for pipeline-parallel (PP) training in a Dragonfly-based all-optical data center network with distributed small-scale micro-electro-mechanical system (MEMS) optical switches. The proposed architecture replaces a centralized large-port-count MEMS switch with multiple small-scale MEMS switches deployed across different pods (PoDs), while preserving the low diameter and scalability of the Dragonfly topology. Based on the predefined local and global fiber mappings, the lightpath provisioning problem is formulated as a joint route and time-slot assignment (RTA) problem for GPU-to-GPU communication requests under different constraints. Three heuristic route selection strategies, namely First-Fit (FF), Traffic-Aware (TA), and Bubble-Aware (BA), are developed. Simulation results show that BA consistently outperforms FF and TA by selecting feasible routes that introduce smaller pipeline bubbles.

17:00-17:15 · ACP2026-0714-63
Lightpath-Aware Pipeline Stage Placement and Heterogeneous GPUs Assignment for Geo-Distributed LLM Training over Optical Networks
Qile Liu[1], Dianxuan Fu[1], Xingyu Liu[1], Jiaqiu Li[1], Weisheng Hu[1], Qunbi Zhuge[1*]
1.Shanghai Jiao Tong University, China
Pipeline parallelism (PP) enables Transformer-based large language model (LLM) training across geo-distributed graphics processing unit (GPU) data centers (DCs), due to its low-frequency and point-to-point communication requirements. In PP, the layers of an LLM are partitioned into multiple sequential stages and assigned to different GPUs. However, in heterogeneous GPU clusters interconnected via Cross-DC optical networks, determining suitable PP stage placement is challenging. Because each placement decision affects the execution time on heterogeneous GPU, the message transfer delay over inter-DC lightpaths and their overlapg This paper proposes LA-GA, a lightpath-aware genetic algorithm for pipeline stage placement in heterogeneous geo-distributed GPU datacenters. It jointly considers stage computation costs, GPU heterogeneity, and routing and wavelength assignment (RWA) to reduce pipeline bubbles. Simulation results on NSFNET and USNET with Llama-7B/13B/34B show that LA-GA reduces iteration time by up to 88.1% and bubble ratio by up to 50.5% compared with baseline schemes.

17:15-17:30 · ACP2026-0630-54
Segment-Path Per-Packet Routing: An Adaptive Scheme Balancing Global Load and Packet Order for MoE Traffic in Optical-Electrical Network
Pengzhan Zheng[1], Shan Yin[1*], Xiaodong Liu[1], Zixin He[1], Mengru Cai[1], Shanguo Huang[1]
1.Beijing University of Posts and Telecommunications, China
This paper proposes Segmented-Path Per-Packet Routing for MoE traffic in optical-electrical networks. The scheme divides an end-to-end path into common and packet-spraying segments, and adaptively adjusts the segmentation point using loss and reordering feedback. It improves packet ordering while preserving path diversity, reducing packet loss and tail latency.

08:30-10:00 · November 3, 2026 · Tuesday
Optical Network Sensing, Monitoring and Resilience
Presider: Yvan Pointurier, Huawei Technologies, France

08:30-09:00 · ACP2026-1012-4 **Invited**
Integrated Sensing and Communications in terrestrial optical networks
Emanuele Virgillito[1*]
1.PoliTo, Italy
Terrestrial optical networks are pervasive infrastructures spanning vast geographical areas. We investigate the integrated sensing and communication paradigm, transforming existing networks into widespread environmental sensors through streaming telemetry and novel fiber-optic sensing devices.

09:00-09:30 · ACP2026-0831-7 **Invited**
From Digital Twins to Autonomous Agents in Optical Network Control
Reda Ayassi[1*]
1.Huawei, France
Autonomous agents require an accurate physical-layer model to act safely. We examine how digital twins ground LLM reasoning for service deployment, equalization, and performance prediction, and discuss validation, operation-count reduction, and partitioning for scalability.

09:30-09:45 · ACP2026-0628-3
First Field Trial of Transfer Learning-Based OSNR Estimation for Opto-Electronic Decoupled Optical Networks
Xin Qin[1*], Yuqing Han[1], Qian Hu[1], Xiaotian Jiang[1], Xiankun Zhu[1], Meng Chen[1], Huidi Peng[1], Yadong Gong[1], Xiaoli Huo[1]
1.China Telecom, China
A transfer learning-based OSNR estimation scheme is proposed, for the first time, for opto-electronic decoupled field networks. Validated in a multi-vendor field trial, it reduces MAE by 13.5%–21.46% across four ML models versus direct training.

09:45-10:00 · ACP2026-0630-86
Risk-Aware Machine Learning for Soft-Failure Classification in Optical Networks
Hussein Jammal[1*], **Andrea Bianco**[1], Cristina Rottondi[1]
1.Politecnico di Torino, Italy
Machine Learning (ML)-based approaches for soft-failure classification in optical networks are commonly evaluated using aggregate metrics such as accuracy and F1-score, which fail to capture the operational impact of classification errors. In practice, different types of misclassification carry very different costs for the network operator, since failing to detect a degraded lightpath, raising an unnecessary alarm, and attributing a failure to the wrong root cause have distinct consequences on service continuity and maintenance effort. To address this asymmetry, we introduce a risk-aware multiclass soft-failure classification framework based on a Hybrid Ensemble (HE) architecture, which partitions the feature space into regions and allocates dedicated classifiers to each region. We also propose metrics to quantify the operational cost of classification errors and its distribution across failure types and feature-space regions. To verify that the gains come from forming meaningful feature-space regions rather than from the ensemble structure alone, we compare the HE against an Unguided Hybrid Ensemble (UHE) that follows the same ensemble architecture but whose regions are obtained through generic unsupervised clustering of the input features and unconditional acceptance of the classifiers assigned to those regions. Experiments on a multiclass soft-failure dataset show that the proposed approach improves overall accuracy by approximately 5% over a baseline model trained on the full dataset, while reducing expected decision risk by 95%, risk disparity across feature-space regions by 84%, and risk disparity across failure types by 95%.

10:00–10:30 Coffee Break

10:30-12:00 · November 3, 2026 · Tuesday
Digital Twins and Physical-Layer Optimization
Presider: Danshi Wang, Beijing University of Posts and Telecommunications, China

10:30-11:00 · ACP2026-0911-12 **Invited**
Digital Twin for Optical Networks: Data Acquisition and Online Incremental Learning
Xiaomin Liu[1]
1.Shanghai Jiao Tong University, China
This talk presents a field trial demonstrating online continual learning for network performance modeling and QoT optimization under fluctuating traffic loads, integrating this capability with intelligent agents for adaptive network optimization and autonomous decision making.

11:00-11:15 · ACP2026-0629-18
Physical-Domain Prompt-Guided Latent-Space Calibration for Cross-Domain Few-Shot QoT Estimation in Optical Networks
Xue Xiao[1], Chunyu Zhang[2], Qian Guo[1], Danshi Wang[1], Min Zhang[1]
1.Beijing University of Posts and Telecommunications, China;2.University of Science and Technology, China
We propose a physical-domain prompt-guided latent-space calibration framework for few-shot cross-domain QoT estimation under heterogeneous physical-layer configurations, achieving 0.0316 OSNR-prediction MSE and 98.96% lightpath-feasibility accuracy using only four target-domain samples in four representative transfer scenarios.

11:15-11:30 · ACP2026-0701-192
Weakly Physics-Guided Fourier Neural Operator for Accurate EDFA Gain Spectrum Modeling
Yanqin Wang[1], Yifeng Gao[1], Yicheng Jin[1], Junwen Guo[1], Yuqi Li[2], Ming Tang[2], Gangxiang Shen[1], Ning Liu[1*]
1.Soochow University, China;2.Huazhong University of Science and Technology, China
We propose a weakly physics-guided Fourier neural operator for EDFA gain-spectrum prediction. The proposed model outperforms pure FNO and DeepONet-FNO baselines, reducing active-channel MAE from 0.1413 dB to 0.0521 dB.

11:30-11:45 · ACP2026-0701-200
Model-Free Telemetry-Based Online Power Prediction in Optical Systems
Shuang Xie[1*], Dmitrii Briantcev[1*], Sumaiya Ali[1], Daniel Kilper[1]
1.Trinity College Dublin, Ireland
We introduce a model-free, telemetry-based method for one-step-ahead power prediction during single-channel add/drop operations, without ML training or device-level models. On a 290 km field link, it reaches 0.06 dB receiver-side MAE under dense loading.

11:45-12:00 · ACP2026-0701-230
Cross-EDFA Transfer of Channel Provisioning-Risk Knowledge
Kaixuan Sun[1], Joshua Kempton[1], Dan Kilper[1*]
1.Trinity College Dublin, Ireland
We introduce channel provisioning-risk ranking via source-supervised transfer learning to identify worst-case EDFA power dynamics in wavelength assignment. Experiments show 80% recall of high-tilt worst cases after evaluating only 15.6% of candidates using loading-only features.

13:30-15:00 · November 3, 2026 · Tuesday
Intelligent Optical Network Technologies and Quantum Networking
Presider: Xiaoliang Chen, University of Science and Technology of China, China

13:30-14:00 · ACP2026-0701-90 **Invited**
Autonomous Metro Access Networks using Photonics Integrated SOA-based Switch Nodes
Nicola Calabretta[1*]
1.Eindhoven University of Technology, Netherlands
We propose an orchestration-informed reinforcement learning framework for autonomous cascaded SOA switch nodes. Guided by a Digital Twin baseline, the framework achieves fast optimization convergence, significantly reduces power consumption, and ensures stable transmission quality.

14:00-14:30 · ACP2026-0628-16 **Invited**
Emerging Quantum Networking Problems over Fibers, Satellites, and HAPs
Qinglong Huang[1], Zheng Zhang[1], **Qiaolun Zhang**[1*], Jiaheng Xiong[1], Massimo Tornatore[1]
1.Politecnico di Milano, Italy
This talk focuses on several emerging resource-allocation problems for QKD networking over fibers, satellites, and HAPs, highlighting energy-efficient, resilient, and secure designs, while outlining key research challenges for future entanglement-based quantum networks.

14:30-14:45 · ACP2026-0701-109
Simultaneous Suppression of Positive and Negative Crosstalk Orders for LCoS-WSSs using CNN-Based Deconvolution
Jiacheng Yan[1], **Yuzhe Li**[1], Bodong Shi[1], Zihuan Mo[1], Chen Liu[1*]
1.Huazhong University of Science and Technology, China
We propose neural-network-based deconvolution for crosstalk suppression in wavelength selective switches (WSSs). Experimental validation on a 32-port WSS demonstrates simultaneous suppression of positive and negative orders with 25 dB isolation, potentially doubling the port count.

14:45-15:00 · ACP2026-0701-72
Memory-Augmented LLM Agent for GSNR Power Optimization in S+C+L-Band Optical Systems
Kaida Chen[1], Cong Wang[1], Junzhe Xiao[1], Zekun Niu[1*], Weisheng Hu[1], Lilin Yi[1*]
1.Shanghai Jiao Tong University, China
A memory-augmented LLM agent uses phase-conditioned strategy recommendations to optimize GSNR power in S+C+L-band optical systems, reducing ripple and inference cost across 80-, 160-, and 240-km spans under limited interaction budgets with stable generalization results.

15:30-17:30 Coffee Break & Poster Session

N3: Optical Network Architectures, Control and Management (Parallel Session)

Conference Room 102B, 1F

13:30-14:45 · November 3, 2026 · Tuesday

Optical Access and Satellite Networks

Presider: Jiawei Zhang, Beijing University of Posts and Telecommunications, China

13:30-14:00 · ACP2026-0908-10 **Invited**

AI-assisted System Recovery Design for Very High-Speed TDM-Flexible PON

Yanni Ou[1*]

1.Beijing Univeristy of Posts and Telecommunications, China

This work explores DSP and preamble design trade-offs for 100-200 Gbps TDM-based IM/DD flexible bandwidth-limited PONs. Proposed methods apply AI-assisted approach with evaluation of system complexity, receiver sensitivity, power budget, and transmission performance.

14:00-14:15 · ACP2026-0630-93

Real-Time Demonstration of 25G-Granularity P2MP, Featuring Automatic Power Control and Hitless Capacity Upgrade

Tiago Silvério[1,2], Sasipim Srivallapanondh[1], Amir Rashidinejad[3], Miquel Masanas[1], Rafal Kapuscinski[4], Giuseppe Parisi[1], Mohammad M. Hosseini[1], Steven J. Hand[5], Luis Velasco[2], Antonio Napoli[1]

1.Nokia Solutions and Networks GmbH & Co., Germany;2.Universitat Politècnica de Catalunya, Spain;3.Nokia Canada Inc.,, Canada;4.Nokia Solutions and Networks, Poland;5.Nokia of America Corporation, United States

We experimentally demonstrate the first Digital Subcarrier Multiplexing (DSCM)-based, Point-to-Multipoint transmission with 25Gbps granularity, hitless capacity upgrade, enabled by LEAF power optimization. Our solution is achieved within a 50GHz-grid, a relevant requirement for metro/access architectures.

14:15-14:30 · ACP2026-0701-8

Degradation-Aware Resource Allocation for LEO Satellite Networks Under Solar Radiation Storm

Hao Zhou[1], Long Chen[2], Zheng Zhang[1], **Qiaolun Zhang**[1*], Zhenggen Chen[3], Meihan Wu[1], Xiaoyi Fan[4], Cong Zhang[2], Yanran Xiao[1], Li-Chun Wang[3], Francesco Musumeci[1], Massimo Tornatore[1]

1.Politecnico di Milano, Italy;2.Simon Fraser University, Canada;3.National Yang Ming Chiao Tung University, China;4.Jiangxing Intelligence Inc, China

We propose a time-varying model of solar energetic particle-induced capacity degradation in optical inter-satellite links and evaluate routing on a Starlink-based LEO topology, reducing average completion time by up to 16.0% during severe storm conditions.

14:30-14:45 · ACP2026-0714-43

Sun-Aware Computing Task Offloading and Routing in Optical Satellite Network with Space Datacenters

Zhuangzhuang Ma[1], Yongli Zhao[1*], Wei Wang[1], Yuan Cao[2], Yi An[1], Jie Zhang[1]

1.Beijing University of Posts and Telecommunications, China;2.Nanjing University of Posts and Telecommunications, China

In LEO optical computing networks, solar geometry imposes two deterministic constraints: eclipses deplete satellite batteries and sun outages block result return. We propose SALT, a sun-aware offloading and routing algorithm improving end-to-end task completion by up to 80%.

15:30-17:30 Coffee Break & Poster Session

N4: Optical Access and Last-Mile Networks

Conference Room 103C, 1F

13:30-15:30 · November 3, 2026 · Tuesday

Optical sensing and communication in access networks

Presider: Shikui Shen, China Unicom, China

13:30-14:30 · ACP2026-0902-11 **Tutorial**

AI-integrated Fibre Access & Broadband Customer Network (AI-FAN): Evolution of xPON, FTTR and AI Convergence

Zhicheng Ye[1*]

1.Huawei, China

The integration of AI into broadband infrastructure generates new value strata, operationalized through three paradigmatic shifts for service provider: "AI Agentic as a Service"establishes a novel value proposition within the in-premises network devices, "Quality on Demand" transforms network performance into a tradable performance tier, and the "Self-Optimizing Network" materially enhances operational excellence via closed-loop automation. These intelligent capabilities are expected to drive non-linear growth in traffic and processing requirements, accelerating the decentralisation of computing resources toward the edge and into elementary network nodes. Consequently, the broadband ecosystem will evolve into a cognitively converged fabric of connectivity and computation, unlocking durable revenue streams and competitive differentiation for service providers.

14:30-15:00 · ACP2026-0701-19 **Invited**

Digital Signal Processing and Optical Sensing for Future Optical Access Networks

Hwan Seok Chung[1]

1.ETRI, Korea

This paper reviews DSP technologies for C-band VHSP operation and discusses ODN monitoring techniques for assessing network performance, link conditions, and signal quality toward future optical access networks.

15:00-15:15 · ACP2026-0701-164

Mueller Matrix Analysis-based Forward Sensing in TDM-CPON

Yiwen Zhang[1], Yuhao Fang[1], Pu Zhou[1], Jiwei Xie[1], William Shieh[1*]

1.Westlake University, China

We propose and experimentally demonstrate the first Mueller-matrix-based sensing scheme for TDM-CPON, achieving ~11 m at a 40 km fiber with reliable data transmission and robust common phase noise resistance.

15:15-15:30 · ACP2026-0713-2

Experimental Demonstration of Similarity-Based DSP Monitoring for Discriminating ODN Loss Variation and OLT Transmitter Performance Degradation in 50G-PON ONU Receiver

Han Hyub Lee[1], Kyungmin Woo[1], Chung Hwan Seok[1]

1.Electronics and Telecommunication Research Institute, Korea

We experimentally demonstrate a receiver-side DSP method using cosine similarity of normalized FFE tap coefficient profiles to distinguish ODN loss from OLT EML degradation in 50G-PON ONU receivers without additional monitoring hardware under similar received power changed.

15:30-17:30 Coffee Break & Poster Session

N4: Optical Access and Last-Mile Networks

Conference Room 102C, 1F

08:30-09:45 · November 4, 2026 · Wednesday

Key technologies for VHSP (1)

Presider: Hanhyub LEE, ETRI, Korea

08:30-09:00 · ACP2026-0826-2 **Invited**

Coherent PON Transceivers: Design Trade-Offs and Implementation Considerations

Gabriele Di Rosa[1*]

1.Adtran Networks SE, Germany

Future coherent PON transceivers should leverage mature optical transport designs while meeting the specific requirements of access networks. This presentation examines key trade-offs and implementation considerations for adapting coherent technology to PON systems.

09:00-09:30 · ACP2026-0628-8 **Invited**

Candidate Technologies and Challenges of Next-Generation Very High-Speed PON

Guoqiang Li[1]

1.ZTE, China

This presentation reviews recent standardization progress of the next-generation very high-speed passive optical network (VHSP), analyzes candidate technologies including system architectures, advanced modulation formats and multiplexing schemes, and discusses major technical challenges.

09:30-09:45 · ACP2026-0701-160

47-dB Power Budget Bidirectional 256-Gb/s Coherent PON with a Laser-Free ONU over 25-km Hollow-Core Fiber

Yutong Pan[1], Tianhong Zhang[1], Yixiao Zhu[2*], Shikui Shen[3*], Yu Qin[4, 5], Wenhao Wang[6], Yichun Shen[5], Ning Zhang[6], Limin Xiao[4], Shuailuo Huang[3], Zelin Wang[3], Fan Zhang[1, 7*]

1.Peking University, China;2.Shanghai Jiao Tong University, China;3.China Unicom Research Institute, China;4.Fudan University, China;5.Zhongtian Technology Advanced Materials Co., Ltd., China;6.SiFotonics Technologies Co. Ltd., China;7.Peng Cheng Laboratory, China

We demonstrate bidirectional 256-Gb/s coherent PON over 25-km HCF with a laser-free ONU using remotely delivered LO and CW carrier, packaged SiP coherent receivers, and achieving 47/49-dB downstream/upstream power budgets at the 15% SD-FEC threshold.

10:00-10:30 Coffee Break

10:30-12:00 · November 4, 2026 · Wednesday

Key technologies for VHSP (2)

Presider: Jim Zou, Adtran Networks, United States

10:30-11:00 · ACP2026-0630-115 **Invited**

Overview of Digital Chromatic dispersion Pre-Compensation (DCPC) techniques for Very High Speed PON

Roberto Gaudino[1*]

1.Politecnico di Torino, Italy

We overview the performance and options for Digital Chromatic dispersion Pre-Compensation (DCPC) for downstream Very High Speed PON based on IM-DD transmission, showing our experimental results at 100G and simulations at 200G.

11:00-11:30 · ACP2026-0712-7 **Invited**

Carrier Leakage Suppression and Power Difference Equalization for TFDMA Coherent PON

Ji Zhou[1*], Haide Wang[2], Liangchuan Li[1*], Changyuan Yu[3], Xiangjun Xin[1]

1.Beijing Institute of Technology, Zhuhai, China;2.Guangdong Polytechnic Normal University, China;3.The Hong Kong Polytechnic University, Hong Kong, China

In this invited talk, we demonstrate the carrier leakage suppression and power difference equalization based on semiconductor optical amplifier (SOA) for TFDMA-based coherent PON, and propose a nonlinearity compensation algorithm to deal with SOA-induced nonlinear distortion.

11:30-11:45 · ACP2026-0701-167 **Industry Innovation Nomination**

Low-Complexity 1-Order IIR Notch Filter for Efficient DC Leakage Frequency Estimation and Removal with 8.4-dB Tolerance Gain in 200G Upstream Coherent TDM-PON

Yicheng Xu[1], Yixiao Zhu[1], Yongxin Sun[1], Weisheng Hu[1], Qunbi Zhuge[1*]

1.Shanghai Jiao Tong University, China

We propose a DC leakage tracking and removal scheme with accurate frequency estimation and low-complexity notch filter for 200G upstream coherent TDM-PON. 6-dB power budget gain and 8.4-dB DC leakage tolerance improvement are experimentally achieved.

11:45-12:00 · ACP2026-0630-104

High Power Budget 160 Gbps PAM-4 Transmission for Next-Generation PONs Using Si-Ge PD

Xishan Yu[1], Chao Cheng[1], Shenlei Bao[1], Xianglin Bu[1], Wenfu Zhang[1], Zhiyuan Yu[1*], Binhao Wang[1*]

1.State Key Laboratory of Ultrafast Optical Science and Technology, Xi'an Institute of Optics and Precision Mechanics Chinese Academy of Sciences, China

To address the core physical-layer bottlenecks of bandwidth limitation and stringent power budgets in next-generation optical access networks, we propose and experimentally demonstrate a high-performance optical access architecture based on the synergistic architecture of a continuous-wave (CW) light at 1310 nm high-power distributed feedback (DFB) laser diode, wideband 67-GHz MZM, a high-gain semiconductor optical amplifier (SOA) pre-amplifier, and a custom-fabricated 57-GHz silicon-germanium photodiode (Si-Ge PD). Under the standard hard-decision forward error correction (HD-FEC) threshold, total power budgets of up to 32.2 dB and 31.4 dB are achieved for 128 Gbps and 160 Gbps transmission, respectively. This hardware-driven approach effectively circumvents the bandwidth bottlenecks and power budget constraints without relying on complex digital signal processing (DSP).

13:30-15:00 · November 4, 2026 · Wednesday

AI and access network

Presider: Dezhi Zhang, China Telecom, China

13:30-14:00 · ACP2026-0901-3 **Invited**

AI Empowerment: Exploration on Intelligent Evolution of Optical Access Network

Yue Sun[1]

1.China Unicom, China

With the advent of the AI era, traditional access networks struggle to support elastic demands of AI-native services. This program investigates intelligent optical access network evolution toward computing-network integration, presenting technical paths, standards and trials for AI-broadband networks.

14:00-14:30 · ACP2026-0902-2 **Invited**

Learning-Aware Optical Transport for Distributed AI over Mobile Networks

Emilio Paolini[1]

1.Scuola Superiore Sant'Anna, Italy

Federated learning over mobile networks generates asynchronous, deadline-sensitive traffic poorly matched to optical circuit switching. This talk explores learning-aware RAN aggregation and optical transport coordination, transforming distributed AI updates into predictable, schedulable high-capacity transfer demands.

14:30-15:00 · ACP2026-0721-7 **Invited**

Multi-Agent Collaborative Optimization for Distributed Fiber-Optic Sensing-Computing Integration

Zhiqun Gu[1*]

1.Beijing University of Posts and Telecommunications, China

To enhance optical-network reliability, this work develops a multi-agent collaborative sensing-computing architecture that jointly optimizes distributed sensing and computing resources, suppresses multifrequency noise, and enables attention-based, accurate identification and localization of fiber-cable external threat events.

15:30-16:00 Coffee Break

16:00-17:00 · November 4, 2026 · Wednesday

New applications of access networks

Presider: Junwen Zhang, Fudan University, China

16:00-16:30 · ACP2026-0908-3 **Invited**

Research and Verification of PON-Based Computing-Networking-Control Integrated Industrial Control System

Ziyao Yang[1*]

1.China Telecom Research Institute, China

This paper leverages built-in PON computing power, integrating soft-PLC and deterministic OT-CT coordination to build an optical-computing-industrial-application system validated in mine scenarios.

16:30-16:45 · ACP2026-0713-16

Quality-of-Transmission-Aware Bandwidth Allocation for RAN Fronthaul over Flexible PON

Shangya Han[1], Kai Jin[1], Yanlu Huang[1], Liyan Wu[1], Kun Xu[1], Yanni Ou[1*]

1.Beijing University of Posts and Telecommunications, China

A quality-of-transmission (QoT)-aware dynamic bandwidth allocation (DBA) algorithm is proposed for a time-division multiplexing flexible passive optical network (TDM Flex-PON) fronthaul architecture to better support vehicle-to-infrastructure (V2I) communications.

16:45-17:00 · ACP2026-0709-2

DARS: Reliability-Aware Joint Wi-Fi-PON Scheduling for FTTR Networks

Shun Zhao[1], Jinhan Cai[1], Biswanath Mukherjee[2], Gangxiang Shen[1*]

1.Soochow University, China;2.Department of Computer Science University of California, China

This paper proposes DARS, a distributed resource unit (DRU)-aware reliable scheduling scheme for fiber-to-the-room (FTTR) networks that leverages Wi-Fi 8 DRUs to enhance wireless transmission reliability under frequency-selective fading. Unlike conventional FTTR scheduling schemes that mainly rely on queue status, traffic priority, or scheduled capacity, DARS formulates the scheduling decision as a regular resource unit (RRU)/DRU mode selection problem, evaluates RRU- and DRU-mode candidates through an effective signal-to-interference-plus-noise ratio (SINR)-based link abstraction, and selects the mode that maximizes the expected served bits. The expected wireless goodput is further used to guide next-cycle passive optical network (PON) pre-grant allocation. Simulation results show that DARS reduces the wireless retransmission ratio from about 18.2% to below 1%, decreases the 99th-percentile end-to-end (E2E) delay of voice (VO) and video (VI) traffic from 6.9/10.1 ms to 2.9/4.0 ms, and lowers the PON pre-grant mismatch ratio from 19.6% to 1.3%.

T1: Short-Reach Transmission Systems for Data-Center, Access, and Mobile Networks

Multi-function Hall A, 1F

13:30-15:30 · November 2, 2026 · Monday

FSO and Wireless Access

Presider: Jiahao Huo, University of Science and Technology Beijing, China

13:30-14:00 · ACP2026-0908-12 **Invited**

Enabling Could Radio Access Network (C-RAN): Why precise clock and carrier frequencies are essential and how to synchronise them

Zhixin Liu[1]

1.University London College, United Kingdom

Future networks will require the convergence of fibre and wireless systems, together with new network capabilities beyond conventional data transmission. In this talk, I will present our published work on clock and carrier-frequency synchronisation for multifunctional radio access networks, with a particular emphasis on the co-transmission of clock and data signals over commercial fibre links.

14:00-14:30 · ACP2026-0701-172 **Invited**

Conflict-Aware Local Search for Single-Mirror OIRS Path Assignment in a 16-Rack FSO Data Center Pod

Yulin Wang[1], Fengyuan Tian[1], Xiaomin Cai[1], Cenqin Jin[2], Gan Zheng[1], **Tianhua Xu**[1*]

1.University of Warwick, United Kingdom;2.Nanjing University of Industry Technology, China

Conflict-aware local search assigns OIRS-assisted FSO paths in a 16-rack data-center pod, jointly accounting for rack and panel conflicts, link reliability, pointing error, and blockage while achieving near-optimal goodput under varied deployment conditions and loads.

14:30-15:00 · ACP2026-0701-218 **Invited**

Recent Progress of Millimeter-Wave and Optical Wireless Communications for Intra-Data Center Networks

Boli Wei[1], Li Pei[1], **Zhouyi Hu**[1*]

1.Beijing Jiaotong University, China

Wireless intra-data center networks leveraging millimeter-wave or free-space optical links have attracted growing attention for improved flexibility and reconfigurability. This invited paper reviews recent advances and key challenges in this field.

15:00-15:30 · ACP2026-0625-9 **Invited**

Toward Converged Fixed-Mobile Coherent Optical Access Networks via Digital-Analog Hybrid Transmission

Qi Wu[1*], Chao Lu[1], Alan Pak Tao Lau[1], Kangping Zhong[1]

1.The Hong Kong Polytechnic University, Hong Kong, China

We present several recent advances toward the integration of fixed and mobile optical access networks for efficient utilization of optical infrastructure, enabled by digital-analog hybrid modulation and detection techniques supporting both IM-DD and coherent solutions.

15:30-16:00 Coffee Break

16:00-17:30 · November 2, 2026 · Monday

Advacned Coding Technology

Presider: Tianwai Bo, Beijing Institute of Technology, China

16:00-16:30 · ACP2026-0818-2 **Invited**

Low-Power, High-Speed Optical Interconnects Enabled by Tomlinson-Harashima Precoding

Guoxiu Huang[1*]

1.1FINITY Inc., Japan

Ultra-high-speed optical interconnects such as 1.6T and 3.2T require wider analog bandwidth in transceivers, which increases power consumption. Tomlinson-Harashima Precoding enables lower-power operation using 1-sps DSP, higher transmitpowerand reducing bandwidth requirements.

16:30-16:45 · ACP2026-0701-186
FFE-Guided Cross-Module Low-Complexity LDPC Decoding for Coherent Optical Receivers
Pengfei He[1], Mingyang Guo[1], Yifan Wang[1], Yanlu Huang[1], Liyan Wu[1], Yanni Ou[1*], Kun Xu[1]
1.State Key Laboratory of Information Photonics and Optical Communications Beijing University of Posts and Telecommunications, China
We propose a cross-module low-complexity LDPC decoding architecture driven by external FFE outputs. Experimental results in a 40-GBaud coherent QPSK system demonstrate a 57.6% decoding complexity reduction while maintaining near-SPA error-correction performance.

16:45-17:15 · ACP2026-0831-1 **Invited**
Chaotic Encryption for Secure Optical Data-center Interconnects
Calvin Chun-Kit Chan[1*], Xiaoqian Liu[1]
1.The Chinese University of Hong Kong, Hong Kong, China
We discuss the design of chaotic encryption schemes for optical data-center interconnect links inboth IM/DD and coherent-lite systems.

17:15-17:30 · ACP2026-0701-207
Low-Coherence ASE Source for SCBI Mitigation in Weakly-Coupled IM/DD-MDM Systems
Kuohai Zhang[1], Sihong Bao[1], Youle Ni[1], Xian Zhou[1], Yuyang Gao[1*], Libin Song[2], Jun Ma[2], Guangsheng An[2]
1.University of Science and Technology Beijing, China;2.CH Business Division BAIC Motor Co. Ltd., China
A physical-layer SCBI mitigation scheme using ASE low-coherence sources is proposed for weakly-coupled MDM-IM/DD systems. Broadening SCBI spectra via ASE bandwidth enables electrical filtering suppression.

08:30-10:00 · November 3, 2026 · Tuesday
Impariments Mitigation
Presider: Kangping Zhong, The Hong Kong Polytechnic University, Hong Kong, China

08:30-08:45 · ACP2026-0713-15
Low Complexity Sub-band Volterra Equalizer For EML-based IM/DD System
Fuchan Xue[1], Tianwai Bo[1*], Yihao Zhou[1], Zhongwei Tan[1], Yi Dong[1]
1.Beijing Institute of Technology, China
We propose to utilize a sub-band Volterra equalizer (SBVE) to mitigate nonlinear distortions in an intensity-modulation/direct-detection system. It achieves similar bit error ratio performance with 20% computational complexity as the conventional full-band Volterra equalizer.

08:45-09:00 · ACP2026-0715-34
High Sensitivity and RIN-Tolerant Multipath Interference Localization in IM/DD PAM4 Systems by Conditional Power Difference
Shen Wang[1], Xuecheng Ren[1], Rui Wang[1], Shaohua Hu[1], Jing Zhang[1*], Kun Qiu[1]
1.University of Electronic Science and Technology of China, China
We propose and experimentally demonstrate a conditional power difference (CPD) method for MPI localization in IM/DD PAM4 systems. This approach maximizes beat components and suppresses intensity noise, successfully detecting MPI at 40-dB SIR.

09:00-09:15 · ACP2026-0630-117
Reset-Free Adaptive Polarization Control for LiNbO3 Polarization Controller in Self-Coherent Detection Systems
Lei Pang[1,2], Haojie Zhu[3], Jinhong Xu[2], Yuhao Fang[3], Weiqi Lu[3], Puzhen Yuan[3], Dayu Shi[3], Hao Chi[1], William Shieh[3*]
1. Hangzhou Dianzi University, China;2.Westlake Institute for Optoelectronics, China;3.Westlake University, China
We demonstrate a reset-free LiNbO3 adaptive polarization controller featuring momentum-assisted center-attraction stochastic parallel gradient descent (MCA-SPGD), elastic-boundary operation, and 12.5-krad/s tracking. 640-Gb/s self-coherent transmission over 50-km SSMF is successfully demonstrated

09:15-09:30 · ACP2026-0701-158
Residual-Carrier Vector Compensation Enabling Nearly DSP-Free Coherent Transmission over 25-km Hollow-Core Fiber with MHz Lasers
Tianhong Zhang[1], Yutong Pan[1], Yu Qin[2,3], Yixiao Zhu[4*], Xiang Cai[1], Shikui Shen[5*], Yichun Shen[3], Limin Xiao[2], Shuailuo Huang[5], Zelin Wang[5], Xian Zhou[6], Fan Zhang[1,7*]
1.Peking University, China;2.Fudan University, China;3.Zhongtian Technology Advanced Materials Co., Ltd., China;4.Shanghai Jiao Tong University, China;5.China Unicom Research Institute, China;6.University of Science and Technology Beijing, China;7.Peng Cheng Laboratory, China
We demonstrate residual-carrier-vector-compensated coherent-lite transmission over 25-km hollow-core fiber using 1-MHz DFB lasers. The receiver reconstructs 2×32-GBaud 32QAM signals without adaptive equalization or carrier phase recovery, reducing receiver-side DSP complexity by 87.4% - 97.3%.

09:30-10:00 · ACP2026-0630-4 **Invited**
"3U"Optical Interconnection Technology Towards Data Center Application
Chao Yang[1*]
1.China Information Communication Technologies Group Corporation, China
Driven by booming AI traffic, we propose diverse optical interconnection schemes leveraging SDM/WDM, MCF, HCF and silicon photonics to deliver high capacity, low latency and low power amid inherent physical constraints.

10:00-10:30 Coffee Break

10:30-12:00 · November 3, 2026 · Tuesday
High-Speed PON
Presider: Ming Luo, China Information and Communication Technologies Group Corporation, China

10:30-11:00 · ACP2026-0831-3 **Invited**
Flexible PON Enabled by Asymmetric Polar-BCH Product Codes
Bin Chen[1*], Yifan Ye[1]
1.Hefei University of Technology, China
We propose a flexible-rate product code combining BCH and polar codes for coherent/IMDD PONs. Experimental validationshows up to 1.75-dB gain over hard-decision product codes andfine-grained rate adaptation,making it a highly suitable FEC solution for future high-speed and flexible PONs.

11:00-11:15 · ACP2026-0701-112
256 Gb/s Coherent PON over 25-km Hollow-Core Fiber with 52-dB Power Budget
Yutong Pan[1], Tianhong Zhang[1], Yu Qin[2,3], Yixiao Zhu[4], Wenhao Wang[5], Shikui Shen[6*], Yichun Shen[3], Ning Zhang[5], Limin Xiao[2], Shuailuo Huang[6], Zelin Wang[6], Fan Zhang[1,7*]
1.Peking University, China;2.Fudan University, China;3.Zhongtian Technology Advanced Materials Co., Ltd., China;4.Shanghai Jiao Tong University, China;5.SiFotonics Technologies Co. Ltd., China;6.China Unicom Research Institute, China;7.Peng Cheng Laboratory, China
We demonstrate a 256 Gb/s coherent PON over 25-km hollow-core fiber, achieving 52-dB power budget at the 15% SD-FEC threshold through reduced nonlinear impairment, with 11-dB improvement over SSMF under identical configuration.

11:15-11:30 · ACP2026-0713-13
Fast Convergence Joint Clock Recovery and Equalization for Non-integer-oversampling 200G DP-IM PON Burst Reception
Junxu Tang[1], Jing Li[1], ZouYang[2], Pengzhuo Sun[1], Zhen Tong[1], Shenmao Zhang[1], Xiaoxiao Dai[1,3*], YangQi[1,3], LiuDeming[1,3], LiGuoqiang[4], HuangXingang[4], HuangXiatao[4]
1.Huazhong University of Science and Technology, China;2.ByteDance Ltd., Beijing, China, China;3.Shenzhen Huazhong University of Science and Technology Research Institute, Albania;4.State Key Laboratory of Mobile Network and Mobile Multimedia Technology, China
A 1.6-sps joint CDR and TMMA receiver DSP scheme is demonstrated for 200G upstream DP-IM coherent PON burst reduce sampling and interpolation complexity with only 0.12-dB sensitivity penalty relative to a 2-sps reference.

11:30-12:00 · ACP2026-0908-1 **Invited**
Optical modulation alternatives for direct-detection based VHSP downstream
Ivan Cano[1*]
1.Huawei, Germany
This talk explores alternative modulation schemes for VHSP downstream transmission. The primary objective is to preserve direct-detection at the ONUs while centralizing transmitter complexity at the OLT and guaranteeing coexistence with legacy PON systems

13:30-15:30 · November 3, 2026 · Tuesday
Optoelectronics Devics for Short Reach
Presider: Xiang Li, China University of Geosciences, China

13:30-14:00 · ACP2026-0817-2 **Invited**
Broadband Single-Drive Optical Single-Sideband Modulation on Thin-Film Lithium Niobate
Changjian Guo[1]
1.South China Normal University, China
We present a single-drive broadband optical single-sideband modulator on thin-film lithium niobate using an integrated photonic Hilbert transformer, targeting data-center interconnects and LiDAR, with emphasis on broadband sideband suppression, transition-bandwidth limitations, and wavelength-detuning compensation.

14:00-14:15 · ACP2026-0626-1
Modal Bandwidth Requirements and Reach Capability of Multimode Fibers for 200G VCSEL Links Near 1060 nm
Xin Chen[1*], Hao Dong[1], Simit Patel[1], Hao Chen[1], Meagan David[1], Ming-Jun Li[1], Vince E. Ferretti[1]
1.Corning Incorporated, United States
We analyzed OM3/OM4 multimode fiber transmission reaches for 200G VCSEL links near 1060 nm and estimated the modal bandwidth required to support 30–50 m reaches across the operating window.

14:15-14:30 · ACP2026-0715-126
Transmission Performance of Single-Mode VCSEL-Based 400G QSFP112 SR4 over Single-Mode Fiber
Yun Bao[1*], Anbin Wang[1], Wenqiang Sun[2], Wei Chen[2], Zhiping Yao[2]
1.Alibaba Cloud, China;2.Suzhou Crealights Technology Co., Ltd., China;
This work demonstrates the transmission performance of a 400G QSFP112 SR4 transceiver over single-mode fiber, enabled by a novel optical design and single-mode VCSELs.

14:30-14:45 · ACP2026-0722-6
A TIR Concentrator Based High-Efficiency Micro-LED Array Optical Interconnect System
Mengze Qi[1], Dayu Shi[1], Junwei Cao[1], Yu Yan[1], Zhengrong Zhao[1], Yuhao Fang[1], Weiqi Lu[1], Haojie Zhu[1], William Shieh[1*]
1.Westlake University, China
A total internal reflection (TIR) concentrator enhanced micro-light-emitting-diode (micro-LED) array based optical interconnect system is demonstrated, achieving a 12.9 dB increase in link budget and 1.2 Gb/s per pixel data rate under 3.8 × 10−3 threshold.

14:45-15:00 · ACP2026-0703-2
Net 3.15 Tb/s O-Band IM/DD DWDM Transmission Over 10-km SMF Enabled by a Quantum-Dot Mode-Locked Laser Frequency Comb for DCIs
Shouchuan Ma[1, 2], Quanxin Na[1], Qibing Wang[1*], Xu Zhang[1], Jingbin Feng[1], Xingfeng Li[1], Shuchao Mi[1], Yeping Lai[1], Xinke Tang[1], Zhaopeng Xu[1], Shujie Pan[3, 4], Siming Chen[4], Lei Wang[1], Jian Song[2], Zhixue He[1*]
1.Pengcheng Laboratory, China;2.Shenzhen International Graduate School, Tsinghua University, China;3.HS Photonics Co., Ltd. Changsha, China;4.Institute of Semiconductors, Chinese Academy of Sciences Beijing, China
We report a record-high single-wavelength rate of 252-Gb/s/λ for 15-channel O-band IM/DD DWDM transmission over 10-km SMF using a QD-MLL comb. Net capacities of 2.80-Tb/s using 100-Gbaud PAM4 and 3.15-Tb/s using 84-Gbaud PAM8 are achieved.

15:00-15:30 · ACP2026-0831-4 **Invited**
Integrated Optical Frequency Combs for Broadband Signal Processing and Optical Communications
Huanfa Peng[1*]
1.Karlsruhe Institute of Technology, Germany
In this talk, we will present our recent progress in optical frequency combs, covering hybrid integration technologies and applications in broadband optical arbitrary-waveform generation and measurement, photonic-electronic analog-to-digital conversion, and high-speed optical communications.

15:30-17:30 Coffee Break & Poster Session

T2: Optical Transmission Systems

Multi-function Hall B, 1F

13:30-15:30 · November 2, 2026 · Monday

High-Speed Coherent Transmission and DSP

Presider: Fan Zhang, Peking University, China

13:30-14:30 · ACP2026-0805-1 **Tutorial**

Key Technology Breakthroughs in Coherent Optical Transmission: From 100G to 1.6T and Beyond

Minggang Si[1]

1.Huawei Technologies, Co,Ltd, China

This tutorial reviews key technology breakthroughs that shaped coherent optical transmission — from digital carrier recovery enabling 100G, through SD-FEC, PCS, and InP modulator advances, to the 1.6T frontier. Each breakthrough created a step up. What comes next?

14:30-15:00 · ACP2026-0828-1 **Invited**

Evaluation and Mitigation of the EEPN Penalties in OIF 1600ZR+ and ITU-T B1T-OTN Transmission Systems

Xiang Liu[1*], Qirui Fan[1], Sisi Tan[2]

1.Huawei Hong Kong Research Center, Hong Kong, China;2.Huawei Technologies, China

We review recent progresses on the mitigation of the equalization-enhanced phase noise (EEPN) penalties in OIF 1600ZR+ and ITU-T beyond-1Tb/s optical transport network (B1T-OTN) systems via optimized laser frequency noise mask and DSP-based EEPN compensation.

15:00-15:15 · ACP2026-0701-233

Pilot-tone-free Ultra-Fast RSOP Tracking for 800G ZR Digital Subcarrier-Multiplexed Coherent Transmission

Dongxu Lu[1], Lei Pang[1,2], Yuhao Fang[3], Dayu Shi[3], William Shieh[3*]

1.Westlake Institute for Optoelectronics, China;2.Hangzhou Dianzi University, China;3.Westlake University, China

We propose a novel scheme for tracking ultra-fast rotation of the state of polarization (RSOP) in digital subcarrier-multiplexed (DSCM) coherent systems, featuring pilot-tone-free 50-Mrad/s RSOP tracking over an 800-Gb/s ZR-class transmission link.

15:15-15:30 · ACP2026-0714-59

Reliability-Weighted Hybrid Stokes-Jones Tracking for Sparse-Pilot Fast Polarization Demultiplexing in Coherent DP-16QAM System

Youmin Zhang[1],Guangzhe Wu[1], Mingming Zhang[1], Zichen Qian[1], Xinyu Hao[1], Hao Wu[1], Ming Tang[*]

1.Huazhong University of Science and Technology, China

Reliability-weighted Stokes-Jones tracking enables sparse-pilot DP-16QAM polarization demultiplexing in coherent optical-fiber links. At 50 Mrad/s RSOP and 0.390625% pilot overhead, it reduces mean BER from 6.68*10-2 to4.34*10-4, outperforming block Jones tracking.

15:30-16:00 Coffee Break

16:00-17:30 · November 2, 2026 · Monday

Space-Division Multiplexing and Multicore Amplification

Presider: Fan Yu, Huawei Optical Product Line Planning Department, China

16:00-16:30 · ACP2026-0824-1 **Invited**

Recent advances in space-division multiplexed transmission

Georg Rademacher[1*]

1.University of Stuttgart, Germany

This invited talk presents breakthrough results in space-division multiplexing, including 19-core RC-MCF and 55-mode transmission, demonstrating unprecedented capacity and scalability. It further introduces novel DSP techniques enabling robust, efficient processing for next-generation SDM optical systems.

16:30-16:45 · ACP2026-0630-85
620-km Field-Deployed Transmission over a Submarine 7-Core Fiber Cable: A Record in Distance and Per-Core Capacity-Distance Product
Ruqi Chen[1*], Yifan Zhang[1*], Yingyu Chen[1], Hanyu Gao[1]
1.Sun Yat-sen University, China
We demonstrate a record—long 620-km transmission over a field-deployed 7-core submarine fiber cable in the South China Sea, achieving a per-core capacity-distance product of 22.14 Pbit/s·km(net 17.7Pbit/s·km) —the highest ever reported for a field-deployed submarine MCF cable. The projected aggregate capacity-distance product across all seven cores reaches 155 Pbit/s·km, confirming the viability of MCF based submarine systems for next-generation transoceanic communication.

16:45-17:00 · ACP2026-0630-81
Fast-Converging Spatially Pre-Whitened LMS MIMO Equalization for MDL-Impaired Long-Haul Mode-Division Multiplexing Systems
Xiuli Ji[1,2], Lingguo Cao[1], Gao Ye[1], Zhongliang Sun[1], Yingxiang Jia[1], Yaojun Qiao[2*], Jinlong Wei[1*]
1.Pengcheng Laboratory, China;2.Beijing University of Posts and Telecommunications, China
We propose a spatial pre-whitened LMS MIMO equalization scheme to mitigate MDL-induced slow convergence in long-haul strongly coupled MDM systems by reducing input covariance eigenvalue spread, achieving 2.5-fold faster convergence and 15% lower steady-state MSE.

17:00-17:15 · ACP2026-0701-10
A Highly Integrated 4-Core EDFA with a Record-low Noise Figure
Bowen Zhang[1], Yanze Wang[1], Yu Wang[1], Shigui Zhang[2,3], Liping Ma[2,3], Yan Wang[2,3], Lingli Wang[4], Jiajun Yuan[4], Jiannan Lu[4], Zhanhua Huang[1], Yaping Liu[1*], Lin Zhang[1*]
1.State Key Laboratory of Precision Measuring Technology and Instruments, Key Laboratory of Opto-Electronic Information Technology of Ministry of Education, Tianjin Key Laboratory of Integrated Opto-Electronics Technologies and Devices, School of Precision Instruments and Opto-Electronics Engineering Tianjin University, China;2.HMN Technologies Co., Ltd., China;3.Jiangsu Key Laboratory for Subsea Communications and Sensing, China;4.Advanced Fiber Resources (Zhuhai), Ltd., China
We demonstrate a highly integrated 4C-EDFA incorporating a low-loss 4C-IWDM and the first reported 4C-IGFF, achieving 14.71-dB average gain, 0.95-dB gain ripple, and record-low NF below 4.40 dB.

17:15-17:30 · ACP2026-0701-66
Operating-Condition-Aware Modeling for Channel-Resolved C+L-Band Effective Inter-Core Crosstalk Budgeting in a Weakly Coupled Dual-Core EDFA
Wuyan Wang[1]
1. Huazhong University of Science and Technology, China
We evaluate effective inter-core crosstalk spectra for a C+L-band dual-core EDFA, reveal pump-power- and WDM-loading-dependent mean-crosstalk variation and worst-channel risks, and develop an operating-condition-aware model that outperforms baselines in held-out spectral and worst-channel budget prediction.

08:30-10:00 · November 3, 2026 · Tuesday
Integrated Optical Fiber Sensing and Communication
Presider: Xian Zhou, University of Science and Technology Beijing, China

08:30-09:30 · ACP2026-0902-16 **Tutorial**
Integrated Optical Fiber Sensing and Communication Systems
Chao Lu[1]
1.The Hong Kong Polytechnic University, Hong Kong, China
Techniques,recent progress and challenges in integrated optical fiber sensing and communication systems will be discussed. Some application examples will be presented.

09:30-10:00 · ACP2026-0630-33 **Invited**
Research on the Fiber-optic Integrated Sensing and Communication System using Enhanced Forward-transmission Distributed Vibration Sensor
Fei Liu[1*]
1.University of Science and Technology Beijing, China
This report presents our works in fiber-optic integrated sensing and communication system based on enhanced forward-transmission distributed vibration sensor over recent years, from detection approach, laser phase noise suppression method, to integrated sensing/communication scheme.

10:00-10:30 Coffee Break

10:30-12:00 · November 3, 2026 · Tuesday

Optical Frequency Combs and Advanced Optical Transmission

Presider: Yixiao Zhu, Shanghai Jiao Tong University, China

10:30-11:00 · ACP2026-0608-2 **Invited**

Electro-optic comb enabling next-generation multi-functional and power-efficient optical fiber networks

Chenbo Zhang[1*]

1.Peking University, China

We review our recent advances in electro-optic combs applied to next-generation optical networks, demonstrating Pb/s-level radio-over-fiber fronthaul, sub-picosecond synchronization, power-efficient baud-rate coherent reception for AI data centers, and high-sensitivity integrated sensing and communication.

11:00-11:30 · ACP2026-0830-1 **Invited**

End-to-end autoencoder learning for photonic terahertz communication

Jiao Zhang[1*]

1.Purple Mountain Laboratories, China

In recent years, the rapid development of artificial intelligence and deep learning has demonstrated significant potential in designing 6G terahertz (THz) communication system due to their powerful learning capabilities. This talk aims to design intelligent and efficient data-driven algorithms for each module of the end-to-end THz transceiver system and integrate them into an end-to-end deep learning framework to tackle key digital signal processing (DSP) challenges in ultra-wideband THz transmission systems.

11:30-11:45 · ACP2026-0701-76

The Impact of SMF Patch Cords on Performance in the Multi-Span Real-time Transmission Systems

Lipeng Feng[1], Xishuo Wang[1], Anxu Zhang[1], Zhengyu Liu[1], Xiaoli Huo[1], Qiang Fu[1], Tao Ma[1], Zhenfang Wang[1]

1.China Telecom Beijing Research Institute, China

We experimentally analyzetheimpacts of SMF patchcords on the real-time transmission systems with high input power, providing guidance for future deployment of hollow-core fiber (HCF) networks. Patch cords impose a notable limitation on the maximum achievable span count, and the resulting optical signal-to-noise ratio (OSNR) penalty rises with higher inputpower and an increasing number of spans.

11:45-12:00 · ACP2026-0715-5

Single Microcomb Source for Futuristic Submarine Links Employing 32 Fiber Pairs

Arjun Kurur[1*], **Sameer Ahmad Mir**[2*], Silas Lasak Hedeboe[2], Oliver Larsen[2], Christian Schou[2], Yang Liu[2], Yi Zheng[2], Haoyang Tan[2], Minhao Pu[2], Kresten Yvind[2], Metodi Yankov[3], Soren Forchhammer[2], David Moss[4], Leif Katsuo Oxenløwe[2]

1.Technical University of Denmark, Denmark;2.Technical University of Denmark, Denmark;3.Ciena Corporation, Denmark;4.Swinburne University of Technology, Denmark

We demonstrate a microcomb as the sole source for submarine links by distributing its output across 32 fiber pairs. 32 GBaud PM-64QAM signals are transmitted on the highest-loss fiber over 2880 km, indicating the potential of microcombs for future multi-fiber-pair submarine networks.

T2: Optical Transmission Systems

Multi-function Hall A, 1F

08:30-10:00 · November 4, 2026 · Wednesday

Optical Interconnects

Presider: Yan He, The Hong Kong Polytechnic University, Hong Kong, China

08:30-09:00 · ACP2026-0630-123 **Invited**

Scaling Optical Interconnects for the AI Era: From Ultra-High-Speed TFLN Modulators to Cost-Effective Transceivers

Xiansong Fang[1], Yixiao Zhu[2], Lingjun Zhou[3], Xiang Cai[3], Weisheng Hu[2], Fan Zhang[3]
1.Huawei Technologies, China;2.Shanghai Jiao Tong University, China;3.Peking University, China

This talk explores scalable optical interconnects for AI clusters. We present ultra-high-speed TFLN modulators and optical multiplexing to break electronic bottlenecks, alongside cost-effective coherent transceivers utilizing DFB lasers and residual carrier tracking for terabit transmissions.

09:00-09:30 · ACP2026-0911-13 **Invited**

Multi-Dimensional Photonics Integrated Chips and Systems for Optical Interconnection and Computing

Junwen Zhang[1]
1.Fudan University, China

TBD

09:30-09:45 · ACP2026-0626-3

12.8-Tbit/s Coherent WDM Bi-directional Transmission without Phase Recovery based on Wavelength Multicast of a Self-injection Locking Laser

Huabei Liu[1], Qijie Xie[1], Xueyang Li[1], Yaguang Hao[1], Quanxin Na[1], Chunyang Ma[1], Hui Chen[1], Zhixue He[1], Lei Wang[1]
1.PengCheng Laboratory, China

The XPM-based wavelength multicast of a narrow-linewidth self-injection locking laser has enabled 12.8-Tbit/s coherent WDM transmission without carrier phase recovery. 10λ×80-GBaud DP-16QAM signals carried by the sub-kHz-linewidth optical carriers are transmitted bidirectionally over an 8-km anti-resonant hollow-core fiber, achieving a BER below 2E-2.

09:45-10:00 · ACP2026-0630-106

Joint Partial-Response Hybrid-Path Neural Network Equalization and Simplified MLSD for Short-Reach Optical Interconnects

Zedi Zhang[1], Mingche Lai[1], Zheng Peng[1], Chaolong Xu[1], Zhicheng Wang[1], Jianyong Chen[1], Xi Xiao[2], Zhang Luo[1*]
1.National University of Defense Technology, China;2.National Information Optoelectronics Innovation Center, China

Joint reception combining a partial-response hybrid-path neural equalizer and a two-region simplified MLSD is proposed. In 2-km, 212-Gb/s IM/DD PAM4 simulations, it cuts branch-metric computations by 43% and improves sensitivity by 1.19 dB at the 7% HD-FEC threshold.

10:00-10:30 Coffee Break

10:30-12:00 · November 4, 2026 · Wednesday

Transceiver Impairments and Nonlinear Equalization

Presider: Bin Chen, Hefei University of Technology, China

10:30-11:00 · ACP2026-0707-1 **Invited**

Practical and Accurate Assessment of Device Nonlinearities in Optical Transceivers

Zhenning Tao[1], Tong Ye[1], Jingnan Li[1], Xiaofei Su[1], Hisao Nakashima[2], Takeshi Hoshida[2], Yasuhiko Aoki[2]
1.Fujitsu R&D Center, China; 2.1Finity Inc., Japan

Device nonlinearity assessment is challenging because measured nonlinearities rarely reflect those in actual communications. This talk reviews various assessment methods, highlighting the probability maintained (PM) notch method as a practical and accurate solution.

11:00-11:15 · ACP2026-0715-124
Polarization-Insensitive Transceiver IQ Polarity Reversal Identification in Dual-Polarization Coherent Systems
Hong Lin[1], Jing Zhang[1*], Rui Wang[1], Xuecheng Ren[1], Bo Xu[1], Kun Qiu[1]
1.University of Electronic Science and Technology of China, China
We propose a transceiver IQ polarity reversal identification scheme based on the designed single-tone signals and joint polarization-diversity power metric. Experimental results demonstrate accurate polarity state identification under random polarization rotation.

11:15-11:30 · ACP2026-0626-22
Single-Step Digital Backpropagation for Kerr Nonlinearity Compensation in O-band Coherent Transmission
Ogulcan Erdogan[1, 2*], Robert Emmerich[1], Carsten Schmidt-Langhorst[1], Jonas Gläsel[1], Felix Ganzer[1], Patrick Runge[1], Colja Schubert[1], Ronald Freund[1, 3]
1.Fraunhofer Institute for Telecommunications, Heinrich-Hertz-Institut, HHI, Germany;2.ID Photonics GmbH, Germany;3.Technische Universität Berlin, Germany
We propose a single-step digital backpropagation by neglecting the dispersion terms in the coupled nonlinear Schrödinger equation for coherent transmission at 1310 nm. The experimental findings demonstrate that this method compensates for intra-channel nonlinearity while reducing the computational effort, and the BER is reduced at least by one order of magnitude in the nonlinear regime.

11:30-11:45 · ACP2026-0701-157
Hybrid Physics-Guided ML-GN Model for Extended NLI Evaluation
Emanuele Virgillito[1*], Edoardo Longo[1], Sai Kishore Bhyri[2], Joao Pedro[2], Gabriele Galimberti[3], Nelson Costa[3], Walid Wakim[3], Vittorio Curri[1]
1.Politecnico di Torino, Italy;2.Nokia, India;3.Nokia, Italy
We propose a physics-guided machine learning Gaussian-Noise model extension for rapid and accurate nonlinear interference estimation leveraging a disaggregated approach to gaussianization and coherent accumulation, stress-tested against full C-band long-haul dispersion managed and uncompensated transmission.

11:45-12:00 · ACP2026-0715-191
Multi-Receptive-Field Residual Boosting Equalization for DML-IM/DD Links
Yuting Xu[1, 2], Zhaopeng Xu[1*], Zhixue He[1], Chuanchuan Yang[2], Yuping Zhao[2]
1.Pengcheng Laboratory, China;2.Peking University, China
We propose MRF-RB which combines multi-receptive-field FCNs, stage-wise residual learning, and adaptive shrinkage for PAM6 DML-IM/DD equalization, achieving lower BER than conventional, single-FCN, and bagging baselines over 10- and 40-km SSMF.

13:30-15:15 · November 4, 2026 · Wednesday
Hollow-Core Fiber Systems and Performance Monitoring
Presider: Fei Liu, University of Science and Technology Beijing, China

13:30-14:00 · ACP2026-0902-17 **Invited**
Digital twin of Next-generation deployed HCF networks
Alan Pak Tao Lau[1*], Yan He[1], Liang Dou[2], Sai Chen[2]
1.The Hong Kong Polytechnic University, Hong Kong, China;2.Alibaba Cloud, China
We review QoT modeling for hollow-core fiber (HCF) systems, where negligible fiber nonlinearity shifts design from Kerr limits to power-independent floors set by inter-modal interference, reshaping launch power optimization and practical margin allocation

14:00-14:15 · ACP2026-0625-2
Automatic Channel Number Aware Control of EDFAs for Hollow-Core Fiber Systems
Yang Lan[1], Qingyi Guo[1], **Zhiping Jiang**[1*]
1.Huawei Technologies Canada, Canada
We propose an automatic channel-number aware EDFA control strategy for hollow-core fiber systems that adaptively adjusts channel power during add/drop operations, enabled by a proposed single-photodiode-based channel number detection approach. Experimental validation in an 8-amplifier cascaded link demonstrates its advantages over conventional AGC and APC schemes.

14:15-14:30 · ACP2026-0728-7

Optical-Amplification-Free 305-GBd OOK and 165-GBd PAM-4 C-Band IM/DD Transmission Over 1.4-km AR-HCF at Faster-Than-Nyquist Ratios of 146.0% and 33.1%

Cancan Chen[1], Jianwei Tang[1], Zhaopeng Xu[1*], Yingmei Pan[1], Qi Wu[2], Tonghui Ji[3], Xu Zhang[1], Honglin ji[1], Zhongliang Sun[1], Linsheng Fan[1], Junpeng Liang[1], Lulu Liu[1], Shuchao Mi[1], Xingfeng Li[1], Qibing Wang[1], Rui Jiang[1], Jinlong Wei[1], Ke Li[1], Zhixue He[1], Weisheng Hu[1]

1.Pengcheng Laboratory,China;2.The Hong Kong Polytechnic University, Hong Kong, China;3.Great Bay University, China

We experimentally demonstrate C-band faster-than-Nyquist IM/DD transmission over a 1.4-km AR-HCF link without optical amplification, using an MZM-based transmitter and noise-whitening-assisted receiver DSP. Under a 62-GHz system bandwidth, 305-GBd OOK and 165-GBd PAM-4 AR-HCF transmission are successfully achieved, corresponding to FTN ratios of 146.0% and 33.1%, respectively.

14:30-14:45 · ACP2026-0519-1

Fading-Noise Suppression in φ-OTDR Based on Multi-Parameter Optimal-Weight Spatial-Mode Diversity

Qiong Wang[1], Ping Wu[1,2,3], Xueye Shen[1], Shuaijun Xu[1], Zhiliang Zhu[1,2,3], Feng Liu[1,2,3*]

1.College of Electrical and Electronic Engineering, Wenzhou University, China;2.Zhejiang Key Laboratory of Smart Low-Voltage Apparatus and New Energy Application, Wenzhou University, China;3.Wenzhou Key Laboratory of Unmanned Intelligent Systems and Equipment, Wenzhou University, China

This paper proposes and experimentally demonstrates a fading-noise suppression method for few-mode φ-OTDR based on optimal-weight spatial-mode diversity combining. On the basis of the tunable parameters of a conventional optical time-domain reflectometry system, the proposed scheme further introduces the spatial-mode dimension. By jointly considering multidimensional weighting factors, including the detected vibration frequency, localization accuracy, and signal-to-noise ratio of each spatial mode, optimal-weight spatial-mode diversity combining is performed to effectively compensate for fading at different positions. As a result, the coherent fading effect is significantly suppressed.

14:45-15:00 · ACP2026-0715-17

Localization of Overlapped Fiber Anomalies via Spatial Response Function Matching for Power Profile Estimation

Rundong Xie[1], Zhudong Shi[1], Runzhe Fan[1], Guanlin Liu[1], Yuyang Gao[1], Yingming Peng[2], Fan Zhang[3], Xian Zhou[1*]

1.University of Science and Technology Beijing, China;2.China United Network Communications Co., Ltd Foshan Branch, China;3.Peking University, China

A spatial response function-based optimization algorithm resolves overlapping fiber anomalies in correlation method power profile estimation via least-squares envelope fitting, avoiding deconvolution ill-posedness and confining localization error below 0.5 km.

15:00-15:15 · ACP2026-0715-22

Quantitative Center-Frequency-Shift Estimation for DBP-Based Optical Filter Monitoring

Runzhe Fan[1], Yuyang Gao[1], Fei Liu[1], Fan Zhang[2], Xian Zhou[1*]

1.University of Science and Technology Beijing, China;2.Peking University, China

Center-frequency shift in cascaded optical filters degrades DWDM transmission. We propose a DBP-based CFS quantification method using learned inverse-response peaks for filter monitoring. Simulations over a 1200-km coherent link achieve 0.005-GHz minimum estimation error.

15:30-16:00 Coffee Break

16:00-17:30 · November 4, 2026 · Wednesday

AI-Enabled Networks and Advanced Communication Techniques

Presider: Danshi Wang, Beijing University of Posts and Telecommunications, China

16:00-16:30 · ACP2026-0701-159 **Invited**

The Exploration and Practice of New Information Infrastructure in the AI Era

Xiaotian Jiang[1*], Xin Qin[1], Yuyang Liu[1], Lipeng Feng[1], Xia Gao[1], Anxu Zhang[1], Yadong Gong[1], Xiaoli Huo[1]

1.China Telecom Research Institute, China

This paper introduces the technical requirements, key technologies of the new information infrastructure in the AI Era, as well as China Telecom's exploration and practice in this field.

16:30-16:45 · ACP2026-0701-170

Dual-Time-Scale Statistical Analysis of Deep-Fading Suppression and Temporal Variability in Six-Mode Mode-Selective Photonic-Lantern Mode-Diversity Reception

Xiaokai Li[1], Wenjie Guo[1], Song Gao[1], Zhengjie Wang[1], Yaning Sun[1], Huijian Liang[2], Yan Li[1*], Jifang Qiu[1], Jian Wu[1]

1.Beijing University of Posts and Telecommunications, China;2.China Academy of Space Technology, China

A dual-time-scale analysis of a six-mode mode-selective photonic-lantern receiver reveals nonstationary power distributions and stronger diversity gain during deep fades in dynamic FSO links.

16:45-17:00 · ACP2026-0701-118

First Ultra-low-loss Large-effective-area Cut-off Wavelength Down-shifted Four-core Fiber Cable Testbed for Next-generation Ultra-high-speed S+C+L-band Transmission

Jian Cui[1*], Ninglun Gu[1], Cheng Chang[1], Yuxiao Wang[2], Yufeng Han[3], Nan Sun[3], Hong Liu[4], Yue Tian[5], Yu Deng[1], Zhuo Liu[1], Chao Wu[1], Zilin Fan[1], Bin Hao[1], Jinggang Cao[2], Yong Chen[2], Bin Wu[2], Zhihui Dong[3], Wei Sun[3], Yanchun Zhang[3], Baoluo Yan[4], Shang Cao[5], Yan Sun[1], Qi Wan[1], Bing Yan[2]

1.Department of Networks, China Mobile Communications Group Co., Ltd., China; 2.Network Management Center, China Mobile Communications Group Shandong Co., Ltd., China; 3.Jiangsu Hengtong Optic-Electric Co., Ltd., China; 4.WDM System Department of Wireline Product R&D Institute, ZTE Corp., State Key Laboratory of Mobile Network and Mobile Multimedia Technology, China; 5.Huawei Technologies Co.,Ltd., China

The first ultra-low-loss large-effective-area cut-off-shifted four-core fiber cable testbed is field deployed, based on which a real-time 137.76-km unrepeatered field trial over S+C+L bands using 400Gbps/800Gbps OTN transceivers is successfully demonstrated.

17:00-17:15 · ACP2026-0630-109

Multimodal Point Cloud Semantic Communication over Coherent Optical Fiber Links

Di Geng[1], Zhenming Yu[1*], Hongyu Huang[1], Wei Zhang[1], Yan Ma[1], Kun Xu[1]

1.State Key Laboratory of Information Photonics and Optical Communications Beijing University of Posts and Telecommunications, China

Robust geometry--color point cloud transmission is essential for holographic and extended-reality services. Conventional separated coding-modulation schemes may suffer from abrupt reconstruction failure near the decoding threshold. This paper presents Multimodal Point Cloud Semantic Communication (MPC-SemCom), a semantic transmission framework for coherent optical fiber links. MPC-SemCom represents the geometry occupancy and color-attribute modalities as a spatially aligned tensor and maps it directly to continuous transmission symbols through a 3D dual-path semantic encoder. Performance validation over an 80-km coherent link shows that MPC-SemCom improves geometry reconstruction over conventional separated baselines while maintaining comparable color quality. The results show representative gains of approximately 3.7dB and 3.0dB in D1-PSNR and D2-PSNR, respectively, and the proposed scheme mitigates the cliff-effect behavior observed in the separated baselines over the considered optical signal-to-noise ratio range. In a geometry-only mode, MPC-SemCom further reduces the transmitted symbols required to achieve matched D1-PSNR and D2-PSNR by 39.1% and 20.8%, respectively, indicating improved transmission efficiency.

17:15-17:30 · ACP2026-0715-12

Short-Frame CRC-Aided Sequential Candidate Search for High-Order MPPM Optical Sensitivity Enhancement

Shumin Cheng[1], Lingxiao Li[1], Jinwang Qian[2], Zhennan Zheng[1*], Xinlu Gao[1], Shanguo Huang[1]

1.Beijing University of Posts and Telecommunications, China;2.Zhengzhou University of Aeronautics, China

We propose a short-frame CRC-aided successive candidate search for high-order MPPM, using Euclidean-gap-ranked Top-2/Top-3 replacements after CRC failure in 10-Gbaud simulations, achieving 0.33–0.79 dB extra OSNR gain and 2.50 dB over equal-net-rate QPSK at HD-FEC.

T3: Subsystems and Digital Signal Processing for Optical Communications

Multi-function Hall B, 1F

13:30-15:30 · November 3, 2026 · Tuesday

Novel Fibers and Space-Division Multiplexing: Transmission, DSP and Sensing

Presider: Anxu Zhang, China Telecom Research Institute, China

13:30-14:30 · ACP2026-0902-6 Tutorial

Fabrication Technology and Frontier Applications of Hollow Core Fibers

Peng Li[1]

1.Yangtze Optical Fibre and Cable Joint Stock Limited Company, China

This tuorialsummarizes hollow core fiber fabrication technologies, analyzes its core advantages, and explores its frontier applications and development prospects.

14:30-14:45 · ACP2026-0701-236

An ISI-Variance Closed Form and DSP-Aware OSNR Penalty for Gas Line Absorption in Hollow-Core-Fiber Coherent Links

Qingyi Guo[1], Md Ghulam Saber[1], Zhiping Jiang[1]

1.Huawei Technologies Canada, Canada

A closed-form model based on ISI variance is proposed to evaluate the OSNR penalty induced by gas line absorption in hollow-core fibers, incorporating DSP equalization. Analytical predictions exhibit excellent agreement with Monte-Carlo simulations.

14:45-15:00 · ACP2026-0629-19

A Comparative Study on Iterative Solvers of Matrix Inversion for Frequency-Domain MIMO Equalized Optical SDM Systems

Xiuli Ji[1,2], Zhongliang Sun[1], Gao Ye[1], Lingguo Cao[1], Yingxiang Jia[1], Yaojun Qiao[2*], Jinlong Wei[1*]

1.Pengcheng Laboratory, China;2.Beijing University of Posts and Telecommunications, China

We present the first fair numerical and experimental comparison of iterative solvers of matrix inversion for FD-MIMO SDM systems, showing Chebyshev iteration (conjugate gradient) is the optimum solver under MDL of ≤6 dB (6 dB).

15:00-15:15 · ACP2026-0701-4

Differential Group-Delay-Assisted Forward Phase-Sensitive Sensing over a Parallel HCF-SMF Link

Jiwei Xie[1], Zexu Liu[1], Haojie Zhu[1], Weiqi Lu[1], Yuhao Fang[1], Pu Zhou[1], Yu Yan[1], Zhenrong Zhao[1], William Shieh[1*]

1.Westlake University, China

We demonstrate forward vibration localization over parallel 1.5-km HCF-SMF links using self-homodyne balanced detection and robust sensing DSP. A calibrated 1.54-ns/m coefficient reduces a representative localization error from approximately 160 m to below 60 m.

15:15-15:30 · ACP2026-0630-7

Auxiliary-Measurement-Path-Assisted Phase Noise Compensation for Coherent Correlation OTDR Using Low-Cost Broad-Linewidth Lasers

Yimei Pan[1,2], Tao Zeng[1*], Guangming Huang[2], Ziye Zhong[1,2], Chen Wang[1], Botao Yang[1], Te Ke[1], Ziqing Liu[1], Hanbing Li[1], Ming Luo[1], Xi Xiao[1]

1.State key laboratory of Optical Communication Technologies and Networks, China Information Communication Technologies Group Corporation, China;2.College of Physical Science and Technology,Central China Normal University, China

We propose an auxiliary-path-assisted phase noise compensation technique for CC-OTDR, enabling the use of a nominally low-cost, broad-linewidth laser in CC-OTDR. Experimental results demonstrate effective phase-noise suppression, achieving an SNR enhancement of approximately 12 dB.

15:30-17:30 Coffee Break & Poster Session

08:30-09:30 · November 4, 2026 · Wednesday

AI and Machine Learning for Optical Communications

Presider: Yi Yu, The Hong Kong Polytech University JinJiang Technology and Innovation Research Institute, China

08:30-09:00 · ACP2026-0629-21 **Invited**

Autonomous AI agents for stabile optical frequency comb generation and system optimization

Darko Zibar[1], Viswanathan Sankar[1], Christophe Peucheret[2], **Svitlana Matsenko**[1]

1.Technical University of Denmark, Denmark;2. University of Rennes, France

We present reinforcement learning based approach for stable optical frequency comb generation and system optimization. The framework is able to discover various non-intuitive control and optimization strategies.

09:00-09:15 · ACP2026-0630-2

Memory–Nonlinearity Trade-off in Mixture Reservoir Computing for Fiber-Optic Channel Equalization

Huangcheng Zhang[1], Shunya Uchide[1], Soya Shimomura[1], Kensuke Sato[1], Moriya Nakamura[1*]

1.Meiji University, Japan

This study evaluates Mixture Reservoir Computing for fiber-optic equalization, demonstrating that combining linear and nonlinear reservoir nodes balances temporal memory and nonlinear representation, improving compensation of chromatic dispersion and Kerr nonlinearity in coherent transmission systems.

09:15-09:30 · ACP2026-0624-4

A Conditional Diffusion-Based Nonlinear Equalizer for Photonic Terahertz OFDM System

Shenao Cai[1], Zhanjiang Wang[1], Feixiang Zhang[1], Long Zhou[1], Shuhui Zhou[1], Jianguo Yu[1*]

1.Beijing University of Posts and Telecommunications, China

We propose a conditional diffusion-based nonlinear equalizer for photonic terahertz OFDM system, which learns p(x | ˜x) without explicit nonlinear modeling. Experimental results show that the proposed method reduces EVM from 25.8% to 1.9% and BER from 0.0115 to 0, significantly improving link quality.

10:00-10:30 Coffee Break

10:30-12:00 · November 4, 2026 · Wednesday

Transceiver Impairment Characterization, Calibration and Compensation

Presider: Zhaopeng Xu, Pengcheng Laboratory, China

10:30-11:00 · ACP2026-0623-6 **Invited**

Modeling, Characterization, Calibration, and Compensation for the Impairments in Optical DAC Transmitters

Tong Ye[1*]

1.Fujitsu R&D Center CO., LTD., China

We present analytical modeling, nonlinearity characterization, interaction-aware compensation, and practical skew calibration for optical DAC transmitters, with experiments validating the proposed theory, guiding impairment mitigation, and demonstrating wide-range, high-accuracy skew calibration performance.

11:00-11:15 · ACP2026-0701-152

Theoretical and Simulation Study of Adaptive Periodic Time-Varying In-Service Compensation for TI-DAC Mismatches in 200-GSa/s Optical Transmission

Xin Zhang[1], Yuming Zhao[1], Sunningchang Zhang[1], Linsheng Zhong[2, 3], Chengxuan Ye[1], Shenmao Zhang[1*], Xiaoxiao Dai[1], Qi Yang[1], Deming Liu[1]

1.National Engineering Laboratory for Next Generation Internet Access System, School of Optical and Electronic Information, Huazhong University of Science and Technology, China;2.Research Institution of Generic Technology for Integrated Circuit, China;3. Wuhan Trustservice Technology Co., Ltd., China

An in-service compensation method based on periodic time variation is proposed for TI-DACs. Simulations demonstrate over 9-dB SFDR enhancement, a 7.25-dB PAM4 effective-SNR gain, and a 3.21-dB 100-GBaud 16-QAM SNR gain with reduced EVM.

11:15-11:30 · ACP2026-0713-30

6.75-dB SNR Improvement by High-Frequency Pilot-Tone-Assisted TI-ADC Background Calibration for Transceivers

Xuanyu Zhou[1, 2], Yuming Zhao[1], Xin Zhang[1], Sunningchang Zhang[1], Chengxuan Ye[1], Shenmao Zhang[1*], Xiaoxiao Dai[1], Qi Yang[1], Deming Liu[1]

1.Huazhong University of Science and Technology, China;2.China Academy of Information and Communications Technology, China

We propose a pilot-tone-assisted background calibration for TI-ADCs. Embedding a -25 dBc high-frequency probe enables continuous impairment compensation, yielding a 6.75-dB SNR improvement for 100-GBaud PAM4 signals without disrupting payload transmission.

11:30-11:45 · ACP2026-0715-203
An Integrated Calibration, Optimization, and Monitoring Architecture for High-Speed Coherent Optical Transmitters
Shaohua Hu[1*], **Junyuan Nie**[1], Xuecheng Ren[1], Jing Zhang[1], Bo Xu[1], Kun Qiu[1]
1.University of Electronic Science and Technology of China, China
An integrated architecture combines IQ-mismatch calibration, SPSA optimization of pre-emphasis, and in-service monitoring. In a 70-GBaud 16-QAM OBTB experiment, the SNR improves from 11.2 to 14.8 dB and rapidly recovers under disturbance.

11:45-12:00 · ACP2026-0625-5
A Low-Complexity Blind Joint Large CD and Skew Calibration Scheme for Coherent Receivers
Muxin Shi[1], Tian Qiu[1], Jing Li[1], Junxu Tang[1], Caixuan Zhuang[1], Shenmao Zhang[1], Xiaoxiao Dai[1], Qi Yang[1*], Deming Liu[1]
1.Huazhong University of Science and Technology, China
A low-complexity blind two-stage joint calibration scheme is proposed for coherent receivers under large chromatic dispersion (CD) and skew impairments. The proposed scheme first performs a separate coarse estimation of CD and skew to localize a search region, followed by a local joint refinement of residual CD and skew. This approach avoids wide-range multidimensional search while maintaining high estimation accuracy.

13:30-15:30 · November 4, 2026 · Wednesday
Short Reach Interconnects – Equalization, Coding, and Monitoring
Presider: Stephan Pachnicke, Christian-Albrechts-University of Kiel, Germany

13:30-14:00 · ACP2026-0901-1 **Invited**
DSP and Electronic-Photonic Co-design for Silicon-Photonics Optical Engines
Son Le[1*]
1.Ciena, United States Minor Outlying Islands
This paper discusses state-of-the-art DSP techniques and how it is incorporated into electronic-photonic co-design for high-density, 200 Gb/s per lane PAM4 silicon-photonics optical engines

14:00-14:15 · ACP2026-0630-26
Burst Error Canceller for 1-Tap DFE via Start-Point Dynamic Traceback in 256-Gb/s Intra-DCIs
Zhengyu Ma[1], Yuxi Liu[1], Wentao Bian[1], Jiahao Zhou[1], Jing Zhang[1*], Kun Qiu[1]
1.Key Laboratory of Optical Fiber Sensing and Communications, University of Electronic Science and Technology of China, China
We propose a burst-error canceller using dynamic traceback to localize the start of 1-tap DFE error propagation. Combined with duobinary precoding, the scheme provides a 1.88-dB receiver-sensitivity gain in a 256-Gb/s PAM-4 link.

14:15-14:30 · ACP2026-0714-33
Characterizing Nonlinearities in IM-DD Links via the Best Linear Approximation: Distortion Analysis and Modulation Optimization
Sebastian Fraga Fernández[1*], Leonardo Minelli[2], Fernando Di Bernardinis[2], Felipe Villenas[1], Yunus Can Gültekin[1], Alex Alvarado[1]
1.Eindhoven University of Technology, Netherlands;2.Marvell Technology, United States
We use the best linear approximation (BLA) to characterize nonlinearities in IM-DD links. The orthogonal nonlinear distortion is shown to be non-Gaussian. The BLA is used to approximate the optimum modulation depth for different equalizers

14:30-14:45 · ACP2026-0701-171
Edge-Aware Mixed-Precision Kolmogorov–Arnold Network Equalization for High-Speed DML-Based IM/DD Links
Cancan Chen[1], Zhaopeng Xu[1*], Qi Wu[2], Yingying Zhou[1], Honglin Ji[1], Jianwei Tang[1], Linsheng Fan[1], Junpeng Liang[1], Zhongliang Sun[1], Ziqi Liu[1], Rui Jiang[1], Jinlong Wei[1], Qibing Wang[1], Xu Zhang[1], Zhixue He[1], Weisheng Hu[1]
1.Pengcheng Laboratory, China;2.The Hong Kong Polytechnic University, Hong Kong, China
We propose a low-complexity edge-wise mixed-precision KAN equalizer for DML-based IM/DD systems, enabling 100Gb/s PAM-6 over 20km SSMF and 126Gb/s PAM-8over 10km SSMF with 86.8% and 83.5% storage reductions compared with traditional KAN equalizers.

14:45-15:00 · ACP2026-0713-5
Real-Time Golay-Coded OTDR for Full-Link Loss and Reflection Monitoring in PONs
Zhen Tong[1], Zhaolin Zeng[2], Yang Zou[3], Jing Li[1], Qile Jiang[1], Junxu Tang[1], Xiaoxiao Dai[1], Qi Yang[1], Shenmao Zhang[1*]
1.Huazhong University of Science and Technology, China;2.FPGA Design Department, BIANFU Optoelectronics, China;3.ByteDance Ltd, China
This paper proposes an FPGA-based real-time Golay-coded OTDR scheme for optical distribution network monitoring in PONs. A spatial resolution of 10 m and a dynamic range of 13 dB are achieved.

15:00-15:15 · ACP2026-0715-56
Real-Time Demonstration of a Variable-Rate Indoor Interference-Resilient Communication Based on DS-CDMA
Qile Jiang[1], Yizhou Wang[1], YantaoDong[2], Bei Li[2], Yichao Zhang[2], Shenmao Zhang[1], Xiaoxiao Dai[1*], Qi Yang[1], Deming Liu[1]
1.Huazhong University of Science and Technology, China;2.Shanghai Radio Equipment Research Institute, China
A fully real-time, variable-rateinterference-resilient optical communication system based-on RS coding and DS-CDMA is developed. Three transmission rates up to 1 Gbit/s, are validated in an indoor environment, achieving up to 19 dB SIR.

15:15-15:30 · ACP2026-0727-2
FPGA Implementation of an Optimized Layered QC-LDPC Decoder for 10 Gbps Satellite Laser Communications
Yuxi Liu[1], Zhengyu Ma[1], Jing Zhang[1*], Hong Lin[1], Shaohua Hu[1], Kun Qiu[1]
1.University of Electronic Science and Technology of China, Key Laboratory of Optical Fiber Sensing and Communications, China
We propose an optimized layered QC-LDPC decoder with a dual-branch update mechanism forthe CCSDS C2 code.The proposed method resolves the intra-layer conflicts caused by the weight-2 circulant structure. The corresponding FPGA implementation achieves a throughput of 10.82 Gbps at 290 MHz with six decoding iterations, satisfying the requirements of 10 Gbps Inter-satellite laser communicationsystems.

15:30-16:00 Coffee Break

16:00-17:30 · November 4, 2026 · Wednesday
Co-Packaged Optics and Advanced Coherent Transceiver DSP
Presider: Zhaopeng Xu, Pengcheng Laboratory, China

16:00-16:30 · ACP2026-0701-9 **Invited**
From Pluggables to Co-Packaged Optics: Evolution, Key Enabling Technologies, and Future Direction
Xia Sheng[1], Hao Liu[1], Anxu Zhang[1], Yuyang Liu[1], Xishuo Wang[1], Kai Lv[1]
1.China Telecom Research Institute, China
This paper reviews the evolution from pluggable optical transceivers to co-packaged optics, covering key enabling technologies, standardization, challenges, and future trends.

16:30-16:45 · ACP2026-0715-107
Sample-Based Digital Pre-Distortion for Coherent Digital Subcarrier Multiplexing Transmission Systems
Hexun Jiang[1*], Miao Liu[1], Shuai Wei[1], Shiping Li[2], Lei Yuan[1], Ye Zhao[3], Chengbo Li[1], Zhuo Wang[1], Yongben Wang[1*]
1.ZTE Corporation, China;2.Sanechips Technology Corporation, China;3.Wired Systems Department Sanechips Technology Corporation, China
We experimentally demonstrate asample-based digital pre-distortion for mitigating transmitter nonlinearity in digital-subcarrier-multiplexing systems, achieving 0.28 dB gain with affordably complexity

16:45-17:00 · ACP2026-0701-7
Frequency-Domain 4×2 MIMO Equalizer with Two-Stage Phase Rotation for Coherent Optical Communications
Zihan Luo[1], Huibin Zhang[1], Zhenming Yu[1*], Xiangyong Dong[1], Yan Ma[1], Kun Xu[1]
1.Beijing University of Posts and Telecommunications, China
We propose and experimentally demonstrate a low-complexity algorithm that combines frequency-domain 4×2 MIMO equalizer with two-stage phase rotation using DD-LMS feedback, enabling compact compensation of receiver IQ impairments and carrier phase variations. Experiments over 100-km SSMF with 50-GBaud PDM-16QAM show that the proposed scheme achieves comparable performance to the conventional scheme with improved IQ-skew tolerance and low core computational complexity.

17:00-17:15 · ACP2026-0716-7
A Low-Complexity Baud-Rate Timing Error Detector Robust to Polarization Mixing for Coherent-lite Systems
Jun Dong[1], Tianwai Bo[1*], Zhuo Wang[1], Yifan Gou[1], Shiqi Liu[1], Zhongwei Tan[1], Yi Dong[1]
1.Beijing Institute of Technology, China
We propose a low-complexity triple-level Mueller-Müller timing-error detector for baud-rate coherent optical interconnects. By avoiding unreliable near-zero samples, it reduces polarization-induced wrong-sign updates and improves robustness of timing recovery against polarization mixing.

17:15-17:30 · ACP2026-0630-1
Nonlinearity-tolerant Temporal Optimization with Time Division Hybrid Shaping
Junzhe Xiao[1], Zekun Niu[1], Lyu Li[1], Minghui Shi[1], Weisheng Hu[1], Lilin Yi[1*]
1.State Key Lab of Advanced Communication Systems and Networks, School of Electronic Information and Electrical Engineering,Shanghai Jiao Tong University, China
We implement hybrid shaping viatime-division scheme tooptimizes the symbol temporal structure. Perturbation-theory-based analysis reveals SPM and XPM are mitigated through thetemporal structure.Numerical results from single-span system demonstrateGMI-gain of 0.26~bits/4D-sym.

T3: Subsystems and Digital Signal Processing for Optical Communications (Parallel Session)

Multi-function Hall C, 1F

13:30-15:30 · November 4, 2026 · Wednesday

Coherent Optics for Access and Datacenter Networks

Presider: Zhenning Tao, Fujitsu, China

13:30-14:00 · ACP2026-0711-5 **Invited**

An Equipment Vendor's Perspective on Evolving Coherent Optics and Network Architecture for AIDC Scale-Across Clusters

Baoluo Yan[1], Liu Hong[1], Dongchen Zhang[1], Hu Shi[1], Ningcheng Wang[1], Yisong Wang[1], Zhiyong Zhao[1], Yangguang Liu[1], Kezhi Qiao[1]

1.WDM System Department of Wireline Product R&D Institute, ZTE Corporation, China

This paper reviews the motivations for the distributed deployment of AIDCs from an equipment vendor's perspective and analyses the evolutionary trends of cross-domain bandwidth requirements. Multi-rail or multi-fibre parallel technologies enable linear scaling of fiber capacity. Furthermore, some novel high-density DCI-BOX architectures are anticipated to be progressively adopted.

14:00-14:15 · ACP2026-0715-125

AMCC Enabled Wavelength-selective Transmission in Multi-Channel WDM Coherent Systems over 1000 km

Zhiwen Fan[1,2], Tian Qiu[1], Jing Li[1], Junxu Tang[1], Caixuan Zhuang[1], Linsheng Zhong[3,4*], Shenmao Zhang[1], Xiaoxiao Dai[1], Qi Yang[1], Deming Liu[1]

1.Huazhong University of Science and Technology, China;2.CICT Mobile Communication Technology Co., Ltd., China;3.Research Institution of Generic Technology for Integrated Circuit, China;4.Wuhan Trustservice Technology Co., Ltd., China

We propose and experimentally demonstrate an orthogonally coded AMCC scheme in a four-channel 127-Gb/s coherent WDM system over 1000 km. It enables wavelength-selective node identification consuming only 1% optical power, and achieves -52.07 dBm sensitivity with less than 0.2 dB average penalty.

14:15-14:30 · ACP2026-0629-4

Real-Time FPGA Implementation of a Carrier Phase Recovery Using a Simplified 8-Fold Phase LUT for Coherent Optical Communications

Jianyu Wang[1], Jianwei Tang[1], Lingguo Cao[1], Xiuquan Cui[1], Zhaopeng Xu[1], Yanfu Yang[2*], Jinlong Wei[1*], Weisheng Hu[1]

1.Pengcheng Laboratory, China;2.Harbin Institute of Technology, Shenzhen, China

A low-latency and high hardware-efficient real-time DSP is experimentally validated for coherent optical communications. An 8-fold phase LUT and EWMA are used for carrier phase compensation. Compared to conventional LUT, the storage resource occupation is reduced by 87.5%.

14:30-14:45 · ACP2026-0630-12

Low-Complexity FPGA Implementation of a Burst-Mode Coherent Receiver Using Dual-Polarization Training and feedforward polarization demultiplexing

Chen Wang[1], Botao Yang[1], Yimei Pan[1], Te Ke[1], Ziye Zhong[1], Ziqing Liu[1], Tao Zeng[1*], Ming Luo[1], Hanbing Li[1], Xi Xiao[2]

1.State key laboratory of Optical Communication Technologies and Networks, China Information Communication Technologies Group Corporation, China;2.National Optoelectronics Innovation Center, China

We demonstrate a real-time FPGA implementation of a 100-Gb/s DP-QPSK burst-mode coherent receiver using dual-polarization training and feedforward polarization demultiplexing. The receiver achieves -30 dBm back-to-back sensitivity for two alternating logical ONUs.

14:45-15:00 · ACP2026-0715-101

FPGA Implementation of Feedforward Clock Recovery for Coherent PDM-PAM4 PON Burst Reception

Pengzhuo Sun[1], Jing Li[1], Yang Zou[2], Chenghao Chay[1], Junxu Tang[1], Xiatao Huang[3], Guoqiang Li[3], Xingang Huang[3], Shenmao Zhang[1], Xiaoxiao Dai[1], Qi Yang[1], Deming Liu[1]

1.Huazhong University of Science and Technology, China;2.ByteDance Ltd., China;3.State Key Laboratory of Mobile Network and Mobile Multimedia Technology, China

A real-time feedforward clock and data recovery scheme for burst-mode coherent PON is proposed, enabling 100-Gb/s DP-PAM4 transmission over 20 km using only 1,284 DSP slices and achieving 20.48-ns synchronization under a 50-ppm clock-frequency offset

15:00-15:15 · ACP2026-0715-106
First FPGA Implementation of Fermat Number Transform DSP for Alamouti-Coded Simplified Coherent PON
Zheli Liu[1], Siyu Chen[1], Mingming Zhang[1], Xiang Li[2], Ming Tang[1*]
1.Huazhong University of Science and Technology, China;2.China University of Geosciences (Wuhan), China
We propose a low-cost, simplified-DSP self-homodyne coherent PON using Fermat number transform and Alamouti coding, successfully deployed on an FPGA at 120Gb/s. The design achieves 90% DSP48 multiplier saving and a 32-dB power budget.

15:15-15:30 · ACP2026-0701-97
A Cache-Optimal Blocked Lookup-Table Kernel for High-Throughput FEC Encoding and Decoding
Lingxin Zhang[1], Chuanchuan Yang[1*]
1.State Key Laboratory of Photonics and Communications, School of Electronics, Peking University, China
We unify encoding parity generation and decoding syndrome computation in an efficient blocked-LUT kernel and model execution costs across cache levels to guide optimal block-width selection, yielding 22% higher throughput than the largest tested width.

15:30-16:00 Coffee Break

16:00-17:30 · November 4, 2026 · Wednesday
Ultra-Wideband and Multi-Core Fiber Transmission and Performance Monitoring
Presider: Besma Kalla, Eindhoven University of Technology, Netherlands

16:00-16:30 · ACP2026-0818-1 **Invited**
Modelling and design of ultra-wideband fibre transmission systems
Jiaqian Yang[1*]
1.University College London, United Kingdom
We review recent progress in ultra-wideband fibre transmission, covering modelling, model validation, system design, newfibre types and DSP. We demonstrate how combined experimental and numerical approaches support scalable high-capacity transmission across emerging optical systems.

16:30-16:45 · ACP2026-0714-62
Sub-band Power Profile Estimation-Based High Baudrate Transmitter Frequency Response Non-Flatness Monitoring
Yanhong Shi[1], **Ping Zong**[1], Feixue Chen[1], Guozhen Wang[1], Yingjie Jiang[1], Du Tang[2], Fan Zhang[3], Yaojun Qiao[1*]
1.State Key Laboratory of Information Photonics and Optical Communications,Beijing University of Posts and Telecommunications, China;2.Institute of Technology and Standards China Academy of Information and Communications Technology, China;3.State Key Laboratory of Photonics and Communications School of Electronics, Peking University, China
We use sub-band power profile estimation to monitor transmitter frequency response non-flatness in a 290 GBaud link over 80 km. A 4 dB tilt is estimated with 0.34 dB error, and slice count is evaluated.

16:45-17:00 · ACP2026-0630-53
Reliability-Aware Constellation Point Selection for Power Offset-Free Power Profile Estimation Using Hard-Decision Data
Du Tang[1*], Yingjie Jiang[2], Zhiming Sun[3], Fan Zhang[3], Rui Tang[1], Yu Wang[1], Fang Li[1], Yaojun Qiao[2]
1.China Academy of Information and Communications Technology, China;2.State Key Laboratory of Information Photonics and Optical Communications, China;3.State Key Laboratory of Photonics and Communications, China
We propose a reliable constellation point selection method for power offset-free power profile estimation using hard-decision data. The proposed method is experimentally demonstrated in a 500-km 64-GBaud DP-16QAM transmission system.

17:00-17:30 · ACP2026-0722-3 · Invited
Long-haul Multi-core Fiber Transmission and Inter-core Crosstalk Monitoring Using DSP Techniques
Yan Wang[1], Zhongwei Tan[1*], Yihao Zhou[1], Siying Li[1], Ziqi Shen[1], Tianwai Bo[1], Yi Dong[1]
1.Beijing Institute of Technology, China
Inter-core crosstalk (IC-XT) is a unique impairment characteristic in multi-core fibers (MCF). We review the existing DSP-based IC-XT measurement solutions and introduce long-haul transmission over weakly-coupled MCF along with the corresponding monitoring method.

T4: Free-Space Transmission and Communication Systems

Multi-function Hall C, 1F

13:30-15:30 · November 2, 2026 · Monday

Free-space Integrated Sensing and Communications

Presider: Xiong Deng, Southwestern Jiao Tong University, China

13:30-14:30 · ACP2026-0902-7 **Tutorial**

THz photonics-enabled ultrafast communication and high-resolution sensing

Xianbin Yu[1]

1.Zhejiang University, China

This lecture will introduce the fundamentals of THz photonics, present recent research progress onultrafast THz communication and high-resolution THz sensing assisted by photonics, and discuss the challenging aspects for future developments.

14:30-15:00 · ACP2026-0831-2 **Invited**

Optical Wireless Technology: Integrated Sensing and Communication, Photonic Integration, and Over-the-Air Computation

Chengwei Fang[1], Yapeng Xie[1], Da Huang[1], Ngan Nguyen[1], Khuong NGUYEN-VINH[1], Yameng Xu[2], Cuiwei He[3], Sithamparanathan Kandeepan[1], **Ke Wang**[1*]

1.Royal Melbourne Institute of Technology (RMIT University), Australia;2.Changchun University of Science and Technology, China;3. Japan Advanced Institute of Science and Technology (JAIST), Japan

We will reviewemerging optical wireless technologies spanning integrated sensing and communication, photonic integration, and over-the-air computation, highlighting recent advances, enabling architectures, experimental demonstrations, and opportunities for intelligent, efficient, and multifunctional future communication systems.

15:00-15:15 · ACP2026-0627-5

Bidirectional Transmission for MLS-Assisted RO-ISAC Based on Code Division Duplexing

Du Jia[1], Zeng Zhihong[1], **Chen Chen**[1*]

1.Chongqing University, China

A bidirectional transmission scheme based on code-division duplexing (CDD) for the maximum length sequence (MLS)-aided RO-ISAC system is proposed, which enables simultaneous bidirectional transmission and high-precision sensing without sacrificing spectrum resources.

15:15-15:30 · ACP2026-0406-1

LACO-OFDM for Optical ISAC

Benben Li[1], Jiale Wang[1], Jie Lian[1*]

1.Northwestern Polytechnical University, China

An LACO-OFDM framework for free-space optical ISAC is developed, jointly modeling asymmetric clipping and turbulence. Closed-form performance metrics and weighted power allocation improve the communication-sensing trade-off, exploiting layered transmission gains across distances and channel conditions.

15:30-16:00 Coffee Break

16:00-17:30 · November 2, 2026 · Monday

Optical Wireless Receivers, Visible Light Communications and Positioning

Presider: Oskars Ozolins, Riga Technical University, Latvia

16:00-16:30 · ACP2026-0630-28 **Invited**

Recent Advances in Fluorescent Antennas for Optical Wireless Communications

Cuiwei He[1]

1.Japan Advanced Institute of Science and Technology (JAIST), Japan

This talk reviews recent advances in fluorescent antennas for optical wireless communications, including fluorescent materials, WDM transmission, optical concentration enhancement, and material engineering techniques such as FRET to increase bandwidth and receiver performance.

16:30-16:45 · ACP2026-0629-32
Correlation-Assisted Adaptive Poisson Evidence Detection for Low-Light Photon-Counting Optical Communications under Time-Varying Backgrounds
Jianlei Zhang[1*], **Linyu Zhang**[1], Yuhe Xun[1], Xun Wang[1], Shihang Dan[1]
1.Xi'an University of Posts and Telecommunications, China
CA-APED performs adaptive background estimation and Poisson evidence accumulation for repetitive-frame low-light photon-counting OOK communication, improving robustness against time-varying backgrounds, reducing the bit error rate, and approaching oracle detection performance while maintaining low implementation complexity.

16:45-17:00 · ACP2026-0630-110
A Real-Time QPSK-OFDM Visible Light Communication System with Automatic Gain Control and NLOS Channel Characterization
Shaojun Shi[1], Aiying Yang[2*], Shaoxi Ji[2], Lihui Feng[2]
1.Beijing Institute of Technology, China;2.School of Optics and Photonics, Beijing Institute of Technology, China
A real-time QPSK-OFDM VLC system with digital AGC is proposed and demonstrated. LOS transmission achieves 1e-9 BER over 54 m and 1.67e-4 at 60.6 m. NLOS reflection reaches 19.2 m using white retroreflective tape. The AGC effectively handles wide dynamic range.

17:00-17:15 · ACP2026-0630-10
Real-Time Smartphone-Based Mobile Optical Wireless Reception With XOR Recovery
Shaoxi Ji[1], Aiying Yang[1*], Lihui Feng[1]
1.Beijing Institute of Technology, China
This work demonstrates a real-time smartphone-based 4CASK-OCC receiver using YUV-domain processing and Repetition-XOR recovery with spatial reliability selection, achieving 2.06 kbit/s effective data rate and reliable mobile text demodulation without offline processing on Android smartphones.

17:15-17:30 · ACP2026-0628-17
Robust RSS-Based Visible Light Positioning with Dual-Ended Tilt Compensation
Ping Fu[1], Xiong Deng[1*], Hao Chen[1], Wenyuan Ma[1], Xihua Zou[1], Yu Xiang[1], Wei Pan[1], Lianshan Yan[1]
1.Southwest Jiaotong University, China
In received signal strength (RSS)-based visible light positioning (VLP) systems, tilts of the light-emitting diode (LED) installation and the photodetector (PD) orientation introduce model mismatch and deteriorate positioning accuracy. Existing compensation methods primarily address single-ended tilt, lacking effective mechanisms to handle the coupled effects of simultaneous LED and PD tilts, which limits the robustness of positioning under dual-ended tilt scenarios. To address this issue, this paper proposes a robust evolutionary algorithm (REA) for joint calibration of the LED transmit orientation, the PD receive orientation, and the system gain under dual-ended tilt conditions. Both simulation and experimental results demonstrate that REA effectively mitigates the model mismatch induced by dual-ended tilt. Under sparse calibration conditions, REA achieves an average positioning error (APE) of 0.71 cm in simulation. In experiments, the 50th and 99th percentiles of the positioning error are 2.85 cm and 6.06 cm, respectively, outperforming both multilateration and Gaussian process regression (GPR) methods.

08:30-10:00 · November 3, 2026 · Tuesday
Beam Steering and Alignment for Mobile Optical Links
Presider: Ming Che, Kyushu University, Japan

08:30-09:00 · ACP2026-0902-18 **Invited**
Beam-steered Optical Wireless Communications under Line-of-Sight and Non-Line-of-Sight links
Xuebing Zhang[1]
1.Zhejiang University, China
This talk explores beam-steered optical wireless communications, covering both line-of-sight and non-line-of-sight link architectures, performance optimization, and their emerging applications in next-generation high-speed, low-latency networks.

09:00-09:30 · ACP2026-0702-5 **Invited**
The Minimalist FSO: Rethinking System Architecture via Positioning-Assisted Alignment
Bingcheng Zhu[1*]
1.Southeast University, China
We propose a novel mobile FSO architecture overcoming bulkiness and tracking latency via compact galvanometer beam steering, photodiode array detection, and fast optical positioning. Experiments demonstrate hierarchical link establishment and significantly simplified optical paths.

09:30-09:45 · ACP2026-0630-11
Gaussian-Approximated Free-Space-to-Fiber Coupling Based on Trilateration Positioning
Qirui Xu[1], Yifei Zhu[1], Tianjin Mei[1], Qirun Fan[1], Chen Liu[1,2*]
1.Huazhong University of Science and Technology, China;2.Optics Valley Laboratory, China
A Gaussian-approximated trilateration coupling method is proposed for fast alignment without beam splitting. Under ±300 μrad disturbances, optimal power is restored using 5.34 sampling points on average. Error-free 10-min transmission is confirmed.

09:45-10:00 · ACP2026-0714-16
Laser Link Acquisition and Tracking for High-Dynamic Tethered Aerostat Free-Space Optical Communications
Xuan Wang[1*]
1.Xi'an Institute of Optics and Precision Mechanics, CAS, China
Field experiments demonstrate reliable laser-link acquisition and tracking between a tethered aerostat and ground terminal, achieving 10μrad accuracy and continuous bidirectional 103.125 Gb/s transmission for 216 minutes under strong platform disturbances.

10:00-10:30 Coffee Break

10:30-12:00 · November 3, 2026 · Tuesday
Advanced Signal Processing for Optical Transmission
Presider: Jian Zhao, South China University of Technology, China

10:30-11:00 · ACP2026-0826-1 **Invited**
Exploration of intelligent all-optical information processing technologies for laser communication
Tianlun Li[1*]
1.Northwestern Polytechnical University, China
The ever-increasing capacity and reach of modern optical communication systems impose stringent requirements on both ultra-sensitive weak signal reception and ultra-fast routing and control at network nodes, which are particularly critical in space laser communication scenarios. This work explores intelligent all-optical information processing technologies to address these challenges along two complementary axes. On the physical layer, we employ phase-sensitive optical parametric amplification based on integrated waveguides to achieve low-noise amplification and all-optical phase regeneration, significantly enhancing detection capability for ultra-long-distance inter-satellite links. To facilitate engineering deployment, we introduce convolutional neural networks for auxiliary phase locking, improving both efficiency and precision of phase control. On the data layer, to overcome the speed bottleneck of electronic decision circuits in optical packet switching, we propose an all-optical logic readout scheme using optical neuron structures, where machine learning algorithms enable robust decision-making from analog optical signals to stable digital levels, supporting packet header recognition and switching control. Together, these two efforts collectively meet the high bandwidth, low latency, and high reliability requirements of space laser communication systems, offering both theoretical insights and practical pathways for future integrated space-ground optical networks.

11:00-11:15 · ACP2026-0701-126
Trellis Shaping for Nonlinearity Mitigation in Coherent Ground-to-Satellite Optical Links with High-Power Optical Amplifiers
Yaning Sun[1], Shuai Wei[1], Ao Li[1], Pengpeng Wei[1], Zulin Liu[1], Huijian Liang[2], Jifang Qiu[1], Xiaobin Hong[1], Yan Li[1*], Jian Wu[1]
1.Beijing University of Posts and Telecommunications, China;2.China Academy of Space Technology, China
Channel-aware trellis shaping is investigated for HPOA-assisted coherent GTS-FSO uplink systems. Results show that TS-64QAM mitigates HPOA-induced nonlinear phase rotation, achieving 67.2 dB FSO loss tolerance and 1 dB higher optimal launch power than PS-64QAM.

11:15-11:30 · ACP2026-0714-47 **Industry Innovation Nomination**
Coherent Receiver Utilizing Real-Time OPLL with Doppler Shift Resistance for Low-power Consumption Inter-satellite Laser Communication
Zhen Luo[1], Yizhou Wang[1], Pengzhuo Sun[1], Shuren Mao[2], Jing Li[1], Shenmao Zhang[1], Xiaoxiao Dai[1*], Jing Zhang[2], Qi Yang[1], Changyuan Yu[3]
1.Huazhong University of Science and Technology, China;2.University of Electronic Science and Technology, China;3.The Hong Kong Polytechnic University, Hong Kong, China
This paper designs a coherent receiver based on a delay-XOR phase frequency detector. It tracks a 100 MHz/s Doppler ramp rate, achieving -36.5 dBm sensitivity for 40 Gbps QPSK at the FEC BER threshold of 3.8e-3.

11:30-11:45 · ACP2026-0701-129
On Modeling and Experimental Assessment of Hybrid Fiber/FSO Links Under Varying Atmospheric Turbulence Conditions
Hangqian Li[1], Li Pei[1*], Zhouyi Hu[1], Bang Yang[2], Jianshuai Wang[1], Han Gao[1]
1.Beijing Jiaotong University, China;2.Harbin Institue of Technology, China
This paper proposes a novel modeling and characterization method for performance assessment of hybrid fiber/FSO links. Experimental results show that under different turbulence conditions, the maximum OSNR difference from the proposed model is 3.37 dB.

11:45-12:00 · ACP2026-0713-8
FSOC Link Quality Assessment Model and Its Application under Complex Atmospheric Conditions
Junpeng Zhang[1]
1.Changchun University of Science and Technology, China
A unified model assesses laser links under multiple atmospheric impairments. Results show 3800 nm outperforms in haze/fog/rain. A dual-threshold hysteresis switching rule using weather data aids link design and control.

13:30-15:30 · November 3, 2026 · Tuesday
Structured Light and Turbulence-Resilient Optical Communications
Presider: Huibin Zhou, Huazhong University of Science and Technology, China

13:30-14:30 · ACP2026-0911-15 **Tutorial**
TBD
Martin Lavery[1]
1.University of Glasgow, United Kingdom
TBD

14:30-14:45 · ACP2026-0630-83
Propagation of Quadratic-Phase-Modulated Power-Exponent-Vortex Beams in Free Space Optical Links
Yunjie Hu[1], Xiong Deng[1*], Bin Lv[1], Yu Zhou[1], Wenyuan Ma[1], Xihua Zou[1], Wei Pan[1], Lianshan Yan[1]
1.Southwest Jiaotong University, China
We propose a quadratic-phase-modulated power exponent vortex (QPEV) beam for turbulence-resilient free-space optical communication. By combining pin-like propagation, controllable focusing, and vortex modulation, the beam maintains stable propagation and enhanced structural robustness under atmospheric turbulence.

14:45-15:00 · ACP2026-0701-217
Phase-Optimized Structured Beams for Enhanced Turbulence Robustness in Underwater Wireless Optical Communications
Bing Han[1], Jingfeng Liu[1], Ziyi Tang[1], Guofeng Yan[1], Jian Wang[1*]
1.Huazhong University of Science and Technology, China
We propose and demonstrate phase-optimized structured beams that are turbulence-resistant and require no demodulation. They exhibit a power gain of 2~3 dB under thermal turbulence and strong water flow, significantly increasing the probability of achieving a BER below the 7% HD-FEC threshold in UWOC links.

15:00-15:15 · ACP2026-0715-80
Spatiotemporal State Modeling of Degraded Optical Spots in Long-Distance Free-Space Laser Communication
Zengxin Liu[1]
1.Xi'an University of Architecture and Technology, China
This work presents a state-driven model for degraded optical spots in a 104.8-km atmospheric laser link, using field sequences to characterize morphology transitions and reproduce spot dynamics for robust detection, tracking, and link performance evaluation.

15:15-15:30 · ACP2026-0728-6
Semantic Domain Impairment Compensation for Free-Space Optical Communications
Yueqiu Mu[1], Yuyang Liu[1*], Hongyu Huang[2*], Wenjie Guo[1], Jiuyu Xie[1], Zhenming Yu[2], Kun Xu[2]
1.China Telecom Research Institute State Key Laboratory of Optical Fiber and Cable Manufacture Technology, China;2.State Key Laboratory of Information Photonics and Optical Communications Beijing University of Posts and Telecommunications, China
We propose a receiver-side semantic impairment compensation scheme for free-space optical communications. A CNN-Transformer module repairs decoded sensing images under atmospheric turbulence. In a 30-Gbaud IM/DD FSO experiment, the scheme improves low-power receiver sensitivity by 0.5 dB and enhances image reconstruction quality under harsh channels.

15:30-17:30 Coffee Break & Poster Session

08:30-10:15 · November 4, 2026 · Wednesday

Mid-Infrared Free-Space Optical Communications

Presider: Haifeng Yao, Beijing Institute of Technology, China

08:30-09:00 · ACP2026-0825-2 **Invited**

Advances in Mid-Infrared Free-Space Optical Communications

Huibin Zhou[1]

1.Huazhong University of Science and Technology, China

Free-space optical (FSO) communications operated in the mid-infrared (mid-IR) band have recently attracted growing interest. This presentation will provide an overview of advances in mid-IR FSO systems, as well as current challenges and future opportunities.

09:00-09:30 · ACP2026-0904-1 **Invited**

Unipolar quantum optoelectronics for mid-IR FSO

Fabrice Monasterio[1*], **Carlo Sirtori**[1]

1.Laboratoire de Physique de l'École Normale Supérieure, France

We present the development of unipolar metamaterial quantum devices for mid-infrared free-space optical communications. We will discuss how, using a specific electronic amplifier, we aim to reachshot-noise-limited10 μmdetectorsoperating at room temperature.

09:30-10:00 · ACP2026-0911-16 **Invited**

Mid-IR FSO Communications Using Unipolar Quantum Optoelectronic Devices

Darja Cirjulina[1], **Zhidong Lyu**[2]

1.Riga Technical University, Latvia; 2. Zhejiang University, China

We review unipolar quantum optoelectronic approaches to free-space optical communications across MWIR and LWIR bands, highlighting quantum cascade lasers, advanced detectors, and device-system co-design toward compact, energy-efficient transceivers, alongside recent progress and remaining challenges.

10:00-10:15 · ACP2026-0611-1

Machine Learning-aided Maximum Likelihood Sequence Estimation for Mid-Wave Infrared FSO Transmission Systems

Magnus Fischer[1*], Zhidong Lyu[2], Silas Oettinghaus[1], Lu Zhang[2], Xianbin Yu[2], Oskars Ozolins[3], Baile Chen[4], Xiaodan Pang[2], Stephan Pachnicke[1]

1.Kiel University, Germany;2.Zhejiang University, China;3.Riga Technical University, Latvia;4.ShanghaiTech University, China

This work examines the performance of ML-based pre-equalization for optimized Viterbi branch metric estimation in 4.65 μm MWIR FSO transmission. Results indicate outperformance of conventional methods and KP4 FEC compliance up to 14 Gb/s.

10:15-10:30 Coffee Break

10:30-12:00 · November 4, 2026 · Wednesday

Satellite Optical Links: Standards, Turbulence and Adaptive Scheduling

Presider: Chen Chen, Chongqing University, China

10:30-11:00 · ACP2026-0818-3 **Invited**

Recent progress of FSOC standards

Buzheng Wei[1*]

1.China Unicom, China

A brief introduction of FSO standards

11:00-11:15 · ACP2026-0722-8

Atmospheric Optical Turbulence Variability Revealed by Multi-site Fried Parameter Observations

Qingfang Jiang[1], Kanglian Zhao[1], Jianhao Yu[1]

1.Nanjing University, China

Atmospheric optical turbulence governs the coherence properties of optical propagation paths and introduces significant variability in free-space optical systems. This study investigates atmospheric turbulence variability using long-term multi-site Fried-parameter observations obtained from Differential Image Motion Monitors (DIMMs). The spatial variability, seasonal dependence, and temporal persistence of atmospheric coherence are characterized from multi-year observations across eight optical monitoring sites. A turbulence-conditioned coherence-threshold framework is further developed to translate observed Fried-parameter statistics into turbulence-conditioned availability metrics for satellite-to-ground optical links. For a representative target error probability of 10^{-6}, increasing the number of selected ground stations from 1 to 3 improves the mean availability from 83.3% to 94.8% and reduces the outage probability from 16.7% to 5.2%. These results reveal the spatial and temporal variability of atmospheric optical turbulence and demonstrate the potential of multi-site Fried-parameter observations for evaluating turbulence constraints on optical ground networks.

11:15-11:30 · ACP2026-0626-6

Revisiting Optical Turbulence Profiles in LEO Satellite-to-Ground Optical Links: Effects of Profile Simplification on Link Reliability

Xinyan Xie[1], Xuesong Wang[2], Jinghua Zhang[3], Haoyang He[1], Yongheng Wen[1], Fengrui Yang[1], Dong Zhao[1*]

1.Fiber Optics Research Center, College of Smart Materials and Future Energy, Fudan University, China;2.School of Science and Engineering, The Chinese University of Hong Kong, Shenzhen, China;3.Technology and Engineering Center for Space Utilization, Chinese Academy of Sciences, China

This paper quantifies how optical-turbulence profile simplification affects LEO satellite-to-ground FSO downlink reliability using ERA5-derived profiles. Temporal simplification produces limited mean signed outage bias, whereas vertical simplification causes larger bias despite preserving the Fried parameter.

11:30-11:45 · ACP2026-0722-4

Slant-Path Fried-Parameter Forecasting for Predictive Scheduling of LEO Satellite-to-Ground Optical Links

Qingfang Jiang[1], Kanglian Zhao[1], Jianhao Yu[1]

1.Nanjing University, China

Atmospheric turbulence constrains the availability of low-Earth-orbit (LEO) satellite-to-ground optical links, especially under rapidly varying slant-path propagation geometries. This paper proposes a Slant-Path Wavelet Neural Operator (SP-WNO) framework to forecast future Fried-parameter fields for predictive link scheduling. By integrating multi-scale wavelet conditioning with a neural-operator backbone, SP-WNO models localized turbulence fluctuations and nonlocal spatio-temporal evolution under varying elevation conditions. Using WRF-derived turbulence fields with four seasonal conditions and two zenith-angle configurations, SP-WNO achieves average MAEs of 0.1968 cm and 0.1440 cm for the 0°–30° and 0°–80° cases, respectively. Furthermore, the predicted turbulence states are mapped into link-availability indicators for proactive transmission/deferral decisions. These results demonstrate the feasibility of integrating slant-path turbulence forecasting with link-availability-aware scheduling for improving the utilization of time-varying LEO optical links.

11:45-12:00 · ACP2026-0630-60

Training Objective, Not Architecture:Threshold-Near Weighting for MCS-Adaptive FSO Turbulence Link Adaptation

Rongmuhe Su[1], Hui Yang[1*], Zhe Niu[1], Yuxuan Yan[1], Qiuyan Yao[1], Buzheng Wei[2], Jie Zhang[1]

1. Beijing University of Posts and Telecommunications, China;2.China Unicom Research Institute, China

We ask whether training objective matters more than architecture for MCS-adaptive FSO turbulence forecasting. Single-variable ablation across three field sites shows threshold-near weighting reduces utility regret by 33%, while published architectures yield no significant gain.

NP1: Fiber-Based and Free-Space Sensing

Conference Room 206, 2F

13:30-15:30 · November 2, 2026 · Monday

DAS and Nano-sensing #1

Presdier: Li Pei, Beijing Jiaotong University, China

13:30-14:00 · ACP2026-0614-1 **Invited**

From Environmental Intelligence to Industrial Diagnostics: Innovative Applications of Distributed Fiber-Optic Sensing

Chun Hong Kang[1*], Islam Ashry[1], Boon Siew Ooi[1,2]

1.King Abdullah University of Science and Technology (KAUST), Saudi Arabia;2.Rensselaer Polytechnic Institute (RPI), United States

This talk presents developments in distributed acoustic and temperature sensing technologies, highlighting innovative applications in ecological monitoring, oceanography surveillance, and energy operations, alongside the growing role of AI in transforming sensing data into actionable insights.

14:00-14:30 · ACP2026-0901-5 **Invited**

Femtosecond Laser 3D Nano-printed Optical Fiber Tip MEMS Sensor

Changrui Liao[1*]

1.Shenzhen University, China

A unified 3D nano-printing platform on optical fiber tips for high-performance MEMS sensing from pN force to multi-physics fields.

14:30-14:45 · ACP2026-0701-246

Medium Identification Based on Correlation Analysis: A DAS Field Trial with Telecom Fibers

Jiawei Luo[1], Ekhiñe Irurozki[1], Pierre Pruvost[1], Yves Jaouën[1], Élie Awwad[1]

1.Télécom Paris, Institut Polytechnique de Paris, France

Distributed acoustic sensing (DAS) enablesinfrastructure monitoring. However, DAS response strongly depends on cable deployment conditions. Based on field trial data, we propose medium-identification methods using cross-correlation, paving the way towards enhanced DAS data processing.

14:45-15:00 · ACP2026-0701-95

Topology-Aware Distributed Fiber-Optic Sensing for UWB-Degraded Indoor Positioning

Yi Cai[1*], **Zhiyang Xue**[1], Yuhan Jiang[1], Lei Wang[1], Huan Huang[1], Dongdong Zou[1]

1.Soochow University, China

A dual-layer topology-aware distributed fiber-optic sensing and Ultra-wideband (UWB) fusion method enables indoor positioning under UWB degradation and reduces the twodimensional RMSE by 49.1% compared with UWB-only factorgraph optimization.

15:00-15:15 · ACP2026-0715-188

TV-Mamba: A Triple-View State-Space Framework for Robust Distributed Fiber-Optic Vibration Event Recognition

Yi Wang[1], Jiashuo Li[1], Xiaojuan Chen[1], Pengbo Liu[1], Gaoyang Jin[1], Chang Qu[1*]

1. Changchun University of Science and Technology, China

TV-Mamba is a compact triple-view state-space framework for distributed fiber-optic vibration recognition, combining complementary signal views, bidirectional sequence modeling, and adaptive fusion to achieve high accuracy with substantially fewer parameters on two public benchmark datasets.

15:15-15:30 · ACP2026-0715-93

Condition-Aware Support-Space Learning for Unknown-Fault Detection in DAS-Monitored Belt Conveyors

Zhenwei Liu[1], Anjie Sun[1], Chenhui Huang[1], Peiyu Zhang[1], Yuanyuan Song[1], Huijuan wu[1*]

1.University of Electronic Science and Technology of China, China

This paper proposes a condition-aware open-set framework for distributed acoustic sensing-based belt-conveyor monitoring, enabling unknown-fault rejection without fault samples through support-space learning, SVM-guided candidate classification, and class-wise verification under realistic in-scene and cross-scene industrial conditions.

15:30-16:00 Coffee Break

16:00-17:30 · November 2, 2026 · Monday

DAS and Nano-sensing #2

Presider: Xingchen Ji, Shanghai Jiao Tong University, China

16:00-16:30 · ACP2026-0911-1 **Invited**

Revisiting Multimode Fibers: Emerging Frontiers in Optical Metrology and Interconnects

Ming Tang[1*]

1.Huazhong University of Science and Technology, China

Rethinking multimode fibers, this talk explores their growing significance beyond traditional limits. We present recent advances in using MMF for high-speed optical field measurement and semantic communication, revealing new potentials for advanced metrology and interconnects.

16:30-16:45 · ACP2026-0701-179

Geo-Referencing of Deployed Dark Fiber Segments Using GPS-tracked Vehicles

Tom Jürgensen[1*], Tobias Philipp[1], Annika Dochhan[1], René Baas[2], Daniel Giemsa[3], Jan Seyfert[3], Jaroslaw Piwonski[4], Stephan Pachnicke[1]

1.Chair of Communications, Kiel University, Germany;2.elekom Deutschland Technik GmbH, Germany;3.Telekom Deutschland Technik GmbH, Germany;4.ADDIX GmbH, Germany

A data-driven geo-referencing method for dark-fiber DAS is presented, matching projected public bus GPS trajectories to DAS vehicle signatures to estimate spatial and temporal offsets, enabling accurate localization of sensing fibers for traffic monitoring.

16:45-17:00 · ACP2026-0630-111

Simulation Assessment of Pulsed DAS and Coherent DWDM In-band Co-propagating Coexistence

Federico Nicotra[1], Ann M. Rosa Brusin[1], Giuseppe Rizzelli[1], **Roberto Gaudino**[1]

1.Politecnico di Torino, Italy

We present a numerical simulation analysis on the co-existence of chirped pulse Distributed Acoustic Sensing (DAS) and coherent DWDM data in the in-band co-propagating option, as introduced in ITU-T G.681 for terrestrial metro networks

17:00-17:15 · ACP2026-0630-91

Femtosecond laser inscribed mid-infrared FBG temperature sensors operating beyond 4.5 microns

Kyriacos Kalli[1], Andreas Ioannou[1], Antreas Theodosiou[1]

1.Cyprus University of Technology, Cyprus

Mid-infrared, first order, fibre Bragg grating temperature sensors based on femtosecond-laser inscription are demonstrated in single-mode indium fluoride optical fibres. The fabricated gratings exhibit excellent spectral quality and reflectivity exceeding 98% at 4.6 microns. Temperature characterization reveals a highly linear wavelength response, with a maximum sensitivity of 51.96 pm/°C.

17:15-17:30 · ACP2026-0713-19

Fiber-Tip Fabry-Pérot Accelerometer Fabricated by Two-Photon Polymerization 3D Printing with Inverse Design Optimization

Xiaoliang Cao[1], Xianhui Li[1], Ziqi Liu[1], Jun Hao[1], Zhaohui Li[1], Zhengyong Liu[1*]

1.Sun Yat-sen University, China

This paper presents a fiber-tip Fabry–Pérot accelerometer fabricated via two-photon polymerization 3D printing and optimized by inverse design. It offers flat response (100–2500 Hz), 251.2 mV/g sensitivity, and high SNR.

08:30-10:00 · November 3, 2026 · Tuesday

Hollow-Core Fibers and Optical Imaging -based Sensor

Presider: Ting Feng, Northeastern University, China

08:30-09:00 · ACP2026-0625-12 **Invited**

Flying Particles in Hollow-Core Fibres: Control and Sensing

Nicolas Joly[1,2]

1.University of Erlangen-Nuremberg, Erlangen, Germany;2.Max Planck Institute for the Science of light, Erlangen, Germany

We present recent advances in trapping and manipulating micron-scale particles flying inside hollow-core fibers. We will show how such particles can be used for sensing, and how we control and cool down their mechanical motion.

09:00-09:15 · ACP2026-0616-2
A Precise Detection Method for Water Ingress in Hollow-Core Fiber Based on Multi-Feature Fusion of Side Images
Yanbiao Chang[1], Chao Wang[2], Li Pei[2], Shuailuo Huang[1], Shikui Shen[1*], He Zhang[1], Zelin Wang[1], Guangquan Wang[1], Xiongyan Tang[1]
1.Chinaunicom, China;2.Beijing Jiaotong University, China
We firstly propose a HCF water ingress detection method based on multi-feature fusion of side images. The fused 3Dfeature vector eliminatesthe fiber rotation angle interference, with a 93.3% wateringressstate recognition rate.

09:15-09:30 · ACP2026-0701-195
HyperRoad: A Spatial-Spectral Dual-Branch RT-DETR for Snapshot Hyperspectral Road Debris Detection
Chenhao Qi[1], Zhenming Yu[2*], Yu Zhang[1], Xinyu Li[1], Kaiang Yang[3], Kun Xu[2]
1.State Key Laboratory of Information Photonics and Optical Communications Beijing University of Posts and Telecommunications, China;2.State Key Laboratory of Information Photonics and Optical Communications Beijing University of Posts and Telecommunications and Xiong'an Aerospace Information Research Institute, China;3.Xiong'an Aerospace Information Research Institute, China
We propose HyperRoad, a snapshot hyper-spectral road debris detection framework based on a spatial-spectral dual-branch RT-DETR that integrates DGSF fusion and SPGQ query initialization. The results demonstrate that our framework achieves high-accuracy detection on our dataset, yielding 97.9% mAP_{50} and 87.6% mAP.

09:30-09:45 · ACP2026-0701-214
Reconstruction-Free Hyperspectral Semantic Segmentation via Task-Driven Diffractive Optical Encoding
Xiqi Li[1], Zhenming Yu[1,2*], Erxia Luo[1], Liang Lin[1], Liming Cheng[1], Kun Xu[1,2]
1.Beijing University of Posts and Telecommunications, China;2.Xiong'an Aerospace Information Research Institute, China
This paper proposes a task-driven hyperspectral sensing framework using a learnable diffractive optical element (DOE) for reconstruction-free semantic segmentation. The DOE encodes task-relevant spectral information into compressed RGB measurements, which are directly fed into an enhanced U-Net, eliminating explicit hyperspectral reconstruction while reducing computational burden and maintaining competitive performance.

09:45-10:00 · ACP2026-0713-7
High-Precision Few-mode Beam Spot Localization based on simplified HRNet
Kaihua Hu[1], Li Pei[1], Jianshuai Wang[1], Zhouyi Hu[1], Wenxuan Xu[1], Han Gao[1]
1.Beijing Jiaotong University, China
The high-resolution net (HRNet) is simplified and trained for high-precision beam spot localization. Both the simulation and experimental results demonstrate that the localization error is less than 8 pixels.

10:00-10:30 Coffee Break

10:30-12:00 · November 3, 2026 · Tuesday
Advanced Reflectometry Techniques for Distributed Multi-Parameter Sensing
Presider: Zheng Zheng, Beihang University, China

10:30-11:00 · ACP2026-0704-1 **Invited**
OFDR-based intelligent optical surface for human activity recognition
Ting Feng[1*]
1.Northeastern University, China
This report presents an optimized OFDR system for intelligent optical surfaces. Integrating high-density distributed fiber sensing with deep learning, it overcomes hardware bottlenecks, achieving high-resolution, real-time tactile perception for smart carpets and robotic skins.

11:00-11:15 · ACP2026-0626-15
Multi-Parameter Demodulation System Based on Co-located Overlapping Fiber Bragg Gratings
Peiyao Wang[1], Li Pei[1*], Jianshuai Wang[1], Chaonan Wang[1], Jacheng Guo[1], Yingjie Wang[1]
1.Beijing Jiaotong University, China
An OFDR method with co-located overlapping FBGs enables simultaneous multi-parameter detection on a single link. With a static parameter linearity over 0.99, it delivers 200Hz–30kHz vibration monitoring and a spatial resolution under 4 mm.

11:15-11:30 · ACP2026-0701-149
DP-BPSK Coherent Correlation OTDR for Optical Phase Perturbation Detection with a Dual-Fixed-Window Differential Scheme
Botao Yang[1], Tao Zeng[1*], Chen Wang[1], Te Ke[1], Yimei Pan[1], Ziye Zhong[1], Ziqing Liu[1], Ming Luo[1], Hanbing Li[1], Xi Xiao[1,2]
1.State Key Laboratory of Optical Communication Technologies and Networks, China;2.National Information Optoelectronics Innovation Center, China
A dual fixed-window differential phase scheme for DP-BPSK coherent C-OTDR improves SNR via continuous sequences. It requires no extra sensors, fits standard coherent transceivers, and experiments verify optical phase perturbation detection over 50-km fiber links.

11:30-11:45 · ACP2026-0715-1
Experimental Investigation of Spatial Thermal Heterogeneity in a Pouch Lithium-Ion Battery Using OFDR
Ziyi Xu[1], Zhi Wang[1], Dan Li[1], Jing Sun[1], Yuang Hou[1], Yitian Fengge[2], Yuang Hou[1], Qinzhuo Liao[2], Fei Liu[1*], Xian Zhou[1*]
1.University of Science and Technology Beijing, China;2.China University of Petroleum, China
Distributed OFDR mapping reveals spatial thermal heterogeneity within pouch lithium-ion batteries by simultaneously measuring surface and embedded temperatures, providing experimental support for hotspot identification, thermal-model validation, and battery thermal-management design.

11:45-12:00 · ACP2026-0630-90
Comprehensive random multi-point vibration demodulation based on a weak- reflection FBG array with OFDR
Chaonan Wang[1], Li Pei[1*], Jianshuai Wang[1], Peiyao Wang[1], Jacheng Guo[1], Yingjie Wang[1]
1.Beijing Jiaotong University, China
A multi-point random vibration demodulation method based on OFDR was proposed. Vibration localization and demodulation from 200 Hz to 30 kHz were achieved, and the algorithm was validated on a pipeline with 207 gratings.

13:30-15:30 · November 3, 2026 · Tuesday
Integrated Sensing and Communication in Optical Fiber Networks
Presider: Yaxi Yan, The Hong Kong Polytechnic University, Hong Kong, China

13:30-14:00 · ACP2026-0902-10 **Invited**
Integrated Forward Transmission Sensing and Communication Systems for optical access networks in the AI Era
Yaxi Yan[1*], Shuai Qu[1], Qi Wu[1], Zhihang Tang[1], Alan Pak Tao Lau[1], Chao Lu[1]
1.The Hong Kong Polytechnic University, Hong Kong, China
We present optical integrated sensing and communication (ISAC) schemes for AI-driven networks, highlighting linear frequency-modulated continuous-wave forward sensing in passive optical networks (PONs) and simultaneous sensing and communication in low-latency hollow-core fibers.

14:00-14:15 · ACP2026-0701-216
Experimental Demonstration of Coexisting High-Speed Coherent Transmission and Remote Sensing through a 10-km 7-core Fiber
Bing Han[1], Ziyi Tang[1], Guofeng Yan[1], Ziqian Wang[1], Jun Liu[1*], Jian Wang[1*]
1.Huazhong University of Science and Technology, China
We propose and demonstrate an integrated system for remote sensing and high-speed coherent communication based on a 7-core fiber. The communication and sensing performances can coexist efficiently.

14:15-14:30 · ACP2026-0701-237
Vibration Localization over Coherent Optical Fiber Links by Using Full-Stokes Trajectory
Pu Zhou[1], Yuhao Fang[1], Yiwen Zhang[1], Jiwei Xie[1], William Shieh[1*]
1.Westlake University, China
Full-Stokes trajectories are reconstructed on the Poincaré-sphere and converted into differential Euclidean-distance sequences. Cross-correlation between link terminals achieves 17.8-m vibration localization during 30-GBaud DP-16QAM transmission while the BER remains below the 7% FEC threshold.

14:30-14:45 · ACP2026-0626-12
Generalized Sensitivity Model for ODSP-Enabled Vibration Phase Detection in Coherent Systems
Zhao Yan[1*], Zhongshu Zhang[1], Ting Jiang[1*], Wen Zuo[1], Baoluo Yan[1], Huan Chen[1], Hu Shi[1], Yangguang Liu[1]
1.ZTE Corporation, China
This paper proposes a generalized sensitivity model for ODSP-enabled vibration phase detection. It characterizes the correlation among laser linewidth, sampling duration, and vibration detection probability, offering design guidelines for laser linewidth and ODSP buffer configuration.

14:45-15:00 · ACP2026-0701-220
From Signal Representation to Quantum Placement: A Systematic Study of Quantum Learning for Optical Fiber Event Classification
Khouloud Abdelli[1]
1.Nokia Bell Labs, Germany
We investigate quantum learning for SOP-based optical fiber event classification through comparative analysis of signal representations, Stokes parameter fusion, quantum architectures, and training data availability, demonstrating improved low-data performance and reduced model complexity using hybrid quantum-classifiers.

15:00-15:15 · ACP2026-0630-101
Low self-noise depolarized FOG by optimizing Sagnac Interferometer Assembly
Ze Gao[1], Liangya Du[1], Yuanhong Yang[1*]
1.Beihang University, China
A secondary-coherence-based method is proposed to measure equivalent birefringence delay of a single-mode coil in a depolarized Sagnac Interferometer Assembly. Temperature characteristics and depolarizer optimization are experimentally verified, yielding reduced DFOG self-noise after parameter tuning.

15:15-15:30 · ACP2026-0701-31
Hierarchical Phase-Frequency Sweep Linearization for FMCW LiDAR Using a Shared-MZI Architecture
Hongduan Fan[1], Tianqi Song[1], Jing Wang[1*]
1.Southern University of Science and Technology, China
We experimentally demonstrate a shared-MZI phase-frequency hierarchical calibration for FMCW LiDAR. This dual-domain predistortion system achieves a 90% region of interest, 2.1×10^{-6} residual nonlinearity, and 13.93 mm spatial resolution.

15:30-17:30 Coffee Break & Poster Session

08:30-09:45 · November 4, 2026 · Wednesday
Biophotonics and Optical Fiber Sensors for Healthcare
Presider: Nicolas Joly, Max Planck Institute for the Science of Light, Germany

08:30-09:00 · ACP2026-0818-5 **Invited**
Terahertz metasensor for species identification of Cryptococcus
Haisu Li[1*], Li Wang[1]
1.Beijing Jiaotong University, China
We propose QBIC-based terahertz metasurfacesfor label-free, low-cost identification of four Cryptococcus species, achieving a record Q-factor of 4034 and revealing species-specific spectral differences linked to cell morphology and genetics.

09:00-09:15 · ACP2026-0715-82
Contactless Obstructive Sleep Apnea Detection System via Fiber Optic Sensors and Machine Learning
Zihan Yu[1], Tianyu Chen[1], Yulin Qiu[1], Xiaolu Yang[2], Weimin Lyu[1*], Changyuan Yu[1]
1.The Hong Kong Polytechnic University, Hong Kong, China;2.Guangdong Provincial People's Hospital (Guangdong Academy of Medical Sciences), Southern Medical University, China
A contactless overnight obstructive sleep apnea detection system using Mach-Zehnder fiber optic sensing with a radial basis function support vector machine classifier to identify apnea events is presented, which is validated against synchronized polysomnography.

09:15-09:30 · ACP2026-0715-54
Interferometric Sensor Based on Spliced Hollow-Core Fiber for Cardiovascular Multi-Parameter Measurement
Jing Li[1], Ziqi Liu[1], Jun Hao[1], Chaorui Zhang[1], Wenxu Zheng[1], Zhengyong Liu[1*]
1.Sun Yat-sen University, China
This work presents a low-cost PDMS-packaged hollow-core quartz FPI sensor for BP, HR and PWV-based arterial stiffness measurement via 1550 nm 1 kHz demodulation and CNN.

09:30-09:45 · ACP2026-0715-66
Optical Fiber Driven Micro-catheter Robot based on Photothermal Effect
Zhongjie Hou[1], Jun Hao[1], Ziqi Liu[1], Xiaoliang Cao[1], Zhengyong Liu[1*]
1.Sun Yat-sen University, China
A micro-catheter robot uses an attenuated optical fiber to photothermally drive LCE, achieving 12.35 mm tip displacement, 35.96° bending, wide range, and good repeatability at low laser power.

10:00-10:30 Coffee Break

10:30-11:30 · November 4, 2026 · Wednesday

Advanced Demodulation and Signal Processing for Fiber-Optic Sensing

Presider: Liang Zhang, Shanghai University, China

10:30-11:00 · ACP2026-0915-1 **Invited**

Cross-Domain Hybrid Demodulation for Multiparameter Fiber-Optic Sensing and Its Applications

Beilei Wu[1], Bin Yin[2]

1.Beijing Jiaotong University, China;2.Ocean University of China, China

To address the challenges of incomplete, inaccurate, and slow multiphysical-parameter measurements in complex atmospheric and marine environments, a cross-domain hybrid demodulation scheme integrating optical sensing with microwave photonic processing is proposed. In the optical domain, wavelength-, polarization-, and intensity-based hybrid interrogation is combined with composite fiber Bragg gratings, Fabry–Perot interferometers, and modal interferometers to enable high-precision sensing of vector flow velocity, salinity, temperature, strain, and electromagnetic fields. Microwave photonic processing based on optoelectronic oscillators (OEOs) and microwave photonic filters (MPFs) is further introduced to map physical quantities onto microwave spectral frequency and power. The high-Q OEO converts weak sensing variations into precisely measurable microwave frequency shifts, while reconfigurable MPFs separate multiple microwave components to improve interrogation accuracy and suppress cross-sensitivity. Experimental results demonstrate high-resolution and fast-response multiparameter sensing, with significantly improved response speed over conventional electrical approaches. The proposed scheme is further validated for real-time multiparameter monitoring in simulated atmospheric and marine environments, highlighting the potential of optical–microwave photonic integration for rapid and high-resolution sensing in complex scenarios.

11:00-11:15 · ACP2026-0630-34

Fourier Neural Operator–Based Spectral Expansion for High–Resolution FFT Demodulation of Fiber Fabry–Perot Sensors

Hao Luo[1], Zongru Yang[1], Zijian Nie[1], Weijia Bao[1*], Yiping Wang[1]

1.Shenzhen University, China

We propose a Fourier neural operator-based spectral expansion method to overcome interrogator bandwidth limits in fiber Fabry-Perot sensors. The expanded spectrum enables high-resolution FFT demodulation, significantly improving sensing accuracy and real-time measurement.

11:15-11:30 · ACP2026-0630-40

Fiber-Optic Differential Phase Sensing with Large Dynamic Range

Haoyan Liu[1], Fangshuo Shi[1], Yanjun Chen[2*], Zhengbin Li[1]

1.Peking University, China;2.Central South University, China

A reciprocal fiber-optic differential interferometer isdemonstrated for dynamic signal sensing. The system shows a flat phase noise response over 0.1-100 Hz, low harmonic distortion below -50 dB, and a dynamic range exceeding 86 dB.

NP2: Microwave Photonic Devices and Systems

Conference Room 101, 1F

13:30-15:30 · November 3, 2026 · Tuesday

Microwave Photonic Devices and Systems (1)

Presider: Xiangchuan Wang, Nanjing University of Aeronautics and Astronautics, China

13:30-14:00 · ACP2026-0701-73 **Invited**

Microwave Photonic Stepped-Frequency Signal Synthesis for Broadband Sensing Applications

Yihan Li[1*]

1.Beihang University, China

This talk reviews recent advances in microwave photonic stepped-frequency signal synthesis enabled by frequency-agile optical sources, covering synthesis principles, optical architectures, and representative broadband sensing applications.

14:00-14:30 · ACP2026-0903-1 **Invited**

Photonic-Assisted Frequency Diverse Array

Yongsheng Gao[1]

1.Northwestern Polytechnical University, China

To overcome limitations of conventional frequency diverse array (FDA) radar signal generation, this study leverages microwave photonic (MWP) systems to enable FDA waveform generation and beamforming, exploiting inherent advantages in bandwidth, tunability, and integration capability.

14:30-14:45 · ACP2026-0715-9

Experimental 48-Gbps Wideband Non-Orthogonal Signal Over-the-Air Transmission at D-Band Using an Ultra-Low-Phase-Noise Photonic-Aided LO

Yalin Zhou[1*], Izzat Darwazeh[1]

1.University College London, United Kingdom

This work experimentally demonstrates 32-48 Gbps spectrally efficient frequency division multiplexing (SEFDM) transmission over a 153 GHz D-band over-the-air link. A photonic heterodyne-based low-phase-noise carrier generator is used to support stable ultra-wideband transmission. Compared with conventional orthogonal frequency division multiplexing (OFDM), the SEFDM waveform achieves up to 30% bandwidth saving, corresponding to a 5.3 GHz reduction at the same data rate. Experimental signal-to-noise ratio (SNR) reveal the tradeoff between noise tolerance and inter-carrier interference for different subcarrier numbers and spectral compression factors. Index Terms—Microwave photonics, D-band, photonic local oscillator, SEFDM, millimeter-wave communications.

14:45-15:00 · ACP2026-0630-16

Photonics-aided THz ISAC System Based on Time Frequency Efficient SFW-OFDM Waveform

Junhao Zhang[1], Mingzheng Lei[2], Min Zhu[1], Junjie Ding[2], Qing Zhong[1], Hongjia Liu[1], Long Zhang[2], Bingchang Hua[2], Yuancheng Cai[2], Jiao Zhang[2], Zhu Sha[3], Jianjun Yu[2]

1.Southeast University, China;2.Purple Mountain Laboratories, China;3.Nankai University, China

We design a time-frequency efficient ISAC waveform by activating specific subcarriers across different OFDM symbols in a stair-like manner. Using the SFW-OFDM waveform, a photonics-aided THz ISAC system achieves 103.2-Gbps data transmission and 7-mm resolution.

15:00-15:15 · ACP2026-0715-19

Real-Time Simultaneous High-Precision Absolute Delay Measurement for Distributed Fiber Networks

Zixin Yuan[1], Wei Wei[1*], Jinping Xiao[1], Jingyao Yuan[1], Xi Wang[1,2], Weilin Xie[1], Yi Dong[1]

1.Beijing Institute of Technology, China;2.Shijiazhuang University, China

We demonstrate real-time absolute-delay measurement for multi-branch distributed fiber networks via path-specific remote frequency shifting and digital phase extraction. Simultaneous monitoring of two 2-km links over 3000s achieves root-mean-square errors of ~20fs.

15:15-15:30 · ACP2026-0629-22

Deep Unfolding Network for Phase Estimation and Tracking in Photonics-Terahertz Wireless Transmission

Yunfei Zhang[1], Feixiang Zhang[1], Zhanjiang Wang[1], Long Zhou[1], Jingqi Zhang[1], Jianguo Yu[1*]

1.Beijing University of Posts and Telecommunications, China

We propose DUET, a deep unfolding network for joint equalization and carrier phase compensation in photonics-terahertz systems. DUET improves BER while maintaining computational complexity and physical interpretability, outperforming conventional and learning-based compensation methods experimentally.

15:30-17:30 Coffee Break & Poster Session

09:00-10:00 · November 4, 2026 · Wednesday

Microwave Photonic Devices and Systems (2)

Presider: Yiwei Xie, Zhejiang University, China

09:00-09:30 · ACP2026-0902-14 **Invited**

Multi-band Frequency Conversion Method for Over-the-Horizon Communication Based on a Single Optical Frequency Comb

Luqiang Wang[1], **Tao Pu**[1*]

1.Army Engineering University of PLA, China

This paper proposes a frequency conversion method based on a single optical frequency comb（OFC）, featuring simple structure, flexible tunability, and high stability. An optical frequency comb signal is generated by a gain-switched semiconductor laser, providing a multi-channel local oscillator source for over-the-horizon(OTH) communication frequency conversion. This OFC signal is further injected into a semiconductor laser acting as a channelized filter and split into two branches: the upper branch uses the local oscillator optical signal to achieve electro-optic loading of the baseband signal via carrier-suppressed single-sideband modulation, while the lower branch, combined with optical switches, enables flexible selection of multiple channels. Based on this architecture, arbitrary frequency conversion of the baseband signal of OTH communication to different frequency bands can be realized. Simulation results show that by controlling the operating modes of the optical switches in each branch with a Field-Programmable Gate Array (FPGA), the system can achieve stable frequency conversion within the 5-30GHz range, covering multiple bands including C, X, Ku, and Ka, demonstrating significant advantages such as wide band coverage and strong anti-jamming capability.

09:30-09:45 · ACP2026-0521-1

Microwave Photonic Dual-Band Radar Signal Generation and De-chrip Reception

Hao Wang[1], Fangzheng Zhang[1*], Gengze Wu[1], Xiaoyue Yu[1], Jiayuan Kong[1], Zhenyu Xu[2], Chenchang Zeng[1], Zihao Zhao[1], Shilong Pan[1]

1.Nanjing University of Aeronautics and Astronautics, China;2.Shanghai Institute of Satellite Engineering, China

Amicrowave photonic dual-band radar signal generation and de-chirp receptionapproachis proposed. Experimental results verify that the proposed method can generate dual-band LFM signals and implement de-chirp reception without crosstalk between the two frequency bands.

09:45-10:00 · ACP2026-0713-6

A Reconfigurable Integrated Microwave Photonic System for Rapid Broadband Spectrum Sensing and Agile Jamming Signal Generation

Han Qiu[1], Zeyong Ding[1], Jiangtao Zhang[1], Wei Zhang[1], Peng Liu[2], Pengsha Zuo[2], Lihan Wang[1*], Xiangchuan Wang[1*], Shilong Pan[1]

1.National Key Laboratory of Microwave Photonics, China;2.Jonhon Optronic Technology Co., Ltd., China

A microwave photonic system for rapid broadband spectrum sensing and jamming is proposed, achieving frequency sensing up to 67 GHz within an 11-ns sweep period and tunable interrupted-sampling repeater jamming.

10:00-10:30 Coffee Break

10:30-12:00 · November 4, 2026 · Wednesday

Microwave Photonic Devices and Systems (3)

Presider: Wei Wei, Beijing Institute of Technology, China

10:30-11:00 · ACP2026-0701-100 **Invited**

Photonics-assisted multi-parameter extraction of microwave signals

Dan Zhu[1*]

1.Nanjing University of Aeronautics and Astronautics, China

Microwave photonic methods for multi-parameter extraction of microwave signals are reported. The multi-dimensional feature sensing of transient and wideband signals across the time, frequency, spatial, and modulation domains is achieved.

11:00-11:30 · ACP2026-0817-4 **Invited**

High-precision and wideband microwave photonic frequency measurement

Yiwei Xie[1*], Zexu Wang[1], Daoxin Dai[1]

1.Zhejiang University, China

This paper reviews state-of-the-art microwave-photonic frequency-measurement techniques and pinpoints key bottlenecks for electromagnetic spectrum measurement. Innovative solutions are proposed, including channelized parallel-processing architectures, microcavities with high Q-factors and large free-spectral ranges, as well as on-chip reconfigurable photonic devices for improved system performance and flexibility.

11:30-11:45 · ACP2026-0701-74
Ultra Wide-bandwidth Silicon Microwave Frequency Measurement System
Zexu Wang[1], Xiaowan Shen[1], Yuyan Yao[1], Ruitao Ma[1], Yiwei Xie[1], Daoxin Dai[1]
1.State Key Laboratory for Modern Optical Instrumentation, College of Optical Science and Engineering, Zhejiang University, China
We demonstrate afrequency measurement systembased on an arrayed waveguide gratingwith a 400 GHz wavelength span, enabling scalable frequency measurement coverage and experimentally achieving 2–50 GHz operation with anerror of 84 MHz.

11:45-12:00 · ACP2026-0626-8
Multidimensional Diffractive Meta-Neural Networks for Super-Resolution DOA Estimation
Songtao Yang[1], Sheng Gao[1], Chu Wu[1], Zejia Zhao[1], Haiou Zhang[1], Xing Lin[1*]
1.Tsinghua University, China
We present a diffractive meta-neural network using meta-trained multidimensional metasurface modulation, multi-frequency coding, and polarization multiplexing for super-resolution DOA estimation, experimentally achieving 0.5° resolution and robust single- and dual-source angular sensing beyond Rayleigh diffraction limits.

13:30-15:30 · November 4, 2026 · Wednesday
Microwave Photonic Devices and Systems (4)
Presider: Zejie Yu, Zhejiang University, China

13:30-14:00 · ACP2026-0629-8 **Invited**
Integrated Lithium Niobate microwave photonics
Hanke Feng[1]
1.City University of Hong Kong, Hong Kong, China
This talk covers thin-film lithium niobate integrated MWP systems, enabling high-fidelity conversion and signal processing. With low-cost manufacturability, this breakthrough offers critical solutions for overcoming RF limitations and advancing future 6G integrated sensing technologies.

14:00-14:30 · ACP2026-0903-2 **Invited**
The Second Evolution of Integrated Optical Frequency Combs
Qifan Yang[1*]
1.Peking University, China
The second evolution of microcombs shifts emphasis from demonstrations to application requirements. I will discuss advances in noise reduction, spectral bandwidth, and optical power, highlighting opportunities in optical communications, precision measurement, and integrated microwave photonics.

14:30-14:45 · ACP2026-0714-46
Integrated Lithium Niobate Tri-comb for Broadband Instantaneous Frequency Measurement
Zeyuan Xie[1], Jiaheng Fan[1], Fei Huang[1], Zhile Wu[1], Daoxin Dai[1], Zejie Yu[1*]
1.Zhejiang University, China
An integrated lithium niobate electro-optic tri-comb combined with ~MHz electronics is demonstrated for unambiguous instantaneous frequency measurement ranging from 10 MHz to 27.01 GHz using fast Fourier transform method.

14:45-15:00 · ACP2026-0715-145
On-chip programmable optical spectral shaper for microwave photonics filters
Haoran Zhang[1], Xiaotian Zhu[2], Shifan Chen[1], Brent E. Little[3], Sai T. Chu[2*], Xingyuan Xu[1*]
1.Beijing University of Posts and Telecommunications, China;2.City University of Hong Kong, Hong Kong, China;3.QXP Technology Inc., China
We present an on-chip programmable optical spectral shaper (OSS) based on a CMOS-compatible, high-index doped silica glass platform, capable of processing 100.3-GHz microcombs and demonstrated in microwave photonics filters (MPFs).

15:00-15:15 · ACP2026-0714-35
TOPS-Speed Complex-Valued Optical Convolutional Accelerator for Feature Extraction and Inference
Yifu Xu[1], Shifan Chen[1], Yuhang Song[1], Yuhan Xie[2], Yunping Bai[1*], Xingyuan Xu[1]
1.Beijing University of Posts and Telecommunications, China;2.China Academy of Industrial Internet, China
We report a complex-valued optical convolutional accelerator for phase-sensitive data streams. By mapping complex-valued kernels onto synthetic wavelengths and time multiplexing complex-valued inputs, the system reaches 1.0256 TeraOPS in the SAR-image demonstration.

15:15-15:30 · ACP2026-0715-94
Optomechanical Frequency Comb Generation in Silica Microspheres
Doudou Feng[1], Jiamin Bai[1], Weiquan Zhu[1], Suwan Sun[1], Hairun Guo[1*]
1.Shanghai University, China
We generate optomechanical frequency combs in silica microspheres of different sizes, investigate the geometric dependence of the mechanical eigenfrequency, and characterize the linewidth and phase noise of the fundamental RF signal.

15:30-16:00 Coffee Break

16:00-17:45 · November 4, 2026 · Wednesday
Microwave Photonic Devices and Systems (5)
Presider: Qifan Yang, Peking University, China

16:00-16:30 · ACP2026-0604-2 **Invited**
High-Precision Delay-Stabilized Fiber-Optic Transmission and Its Applications
Wei Wei[1*]
1.Beijing Institute of Technology, China
We demonstrate high-precision delay-stabilized fiber-optic transmission, achieving long-distance femtosecond-level stability. This work highlights broad applications in distributed coherent radars, interferometric antenna arrays, and stabilizing high-performance microwave photonic devices.

16:30-16:45 · ACP2026-0630-6
A GNSS-over-Fiber Array-Fusion Method under Non-Strict Common-Clock Conditions and Its Error Analysis
Chongmei Liu[1], Yufei Wang[1], Wenlin Bai[2], Yang Li[1*], Jia Ye[1], Xihua Zou[1], Wei Pan[1], Lianshan Yan[1]
1.Southwest Jiaotong University, China;2.Southwest China Research Institute of Electronic Equipment, China
This paper proposes a GNSS-over-fiber array fusion method leveraging short-baseline constraints to fuse multi-antenna observations, significantly enhancing positioning precision, ambiguity-fixing reliability, and solution accuracy by mitigating measurement noise and systematic calibration biases.

16:45-17:00 · ACP2026-0714-9
Widely Tunable Low-Phase-Noise Photonic Microwave Generation Using Stabilized Period-One Laser Dynamics
Kun Liu[1], Pei Zhou[1*], Wenxin Chen[1], Nianqiang Li[1]
1.Soochow University, China
A widely tunable low-phase-noise photonic microwave source is demonstrated using stabilized P1 laser dynamics, achieving 7–52 GHz tuning, −110.3 dBc/Hz @ 10 kHz phase noise, and 65 dB SMSR via SBS-assisted FSOIL stabilization.

17:00-17:15 · ACP2026-0701-37
An Equalization Method Based on Dilated Convolutional Neural Network and Spatial Attention Mechanism for Photonic-Assisted W-Band NOMA-OTFS Systems
Lu Meng[1], Jing He[1*], Kang Liu[1], Jiahui Wu[1], Bozhen Li[1]
1. Hunan University, China
In the paper, an equalization method based on a dilated convolutional neural network and a spatial attention mechanism (DCNN-SAM) is proposed and experimentally demonstrated in a photonic-assisted W-band non-orthogonal multiple access orthogonal time frequency space modulation (NOMA-OTFS) system. Experimental results indicate that, compared with conventional linear equalization schemes, the DCNN-SAM equalization method significantly enhances the communication performance for multiple users, particularly for weak users. In addition, relative to the CNN-based benchmark, the proposed equalization scheme adopts a lightweight network architecture, reducing the computational overhead by approximately 65%.

17:15-17:30 · ACP2026-0715-23
Optical-Power-Insensitive Phase-Stabilized Microwave Transmission System Over Fiber
Xiangyi Liu[1], Wei Wei[1*], Zhuoran Li[1], Xin Wang[1], Zixuan Guo[1], Xi Wang[1,2], Weilin Xie[1], Yi Dong[1]
1.Beijing Institute of Technology, China;2.Shijiazhuang University, China
We demonstrate power-insensitive phase-stabilized microwave transmission using independent optical-power control to mitigate delay errors from non-ideal phase discrimination and photodetection, reducing the delay-fluctuation standard deviation to 24.16fs with both loops enabled.

17:30-17:45 · ACP2026-0715-151

High-order Dispersion Synthesizer with Dual-Chirped Multimode Waveguide Gratings

Ruitao Ma[1], Fei Huang[1], Zexu Wang[1], Shujun Liu[1], Zejie Yu[1*], Daoxin Dai[1]

1.State Key Laboratory for Modern Optical Instrumentation, College of Optical Science and Engineering, Zhejiang University, China

We experimentally demonstrate a TFLN high-order dispersion synthesizer based on dual-chirped multimode waveguide gratings, realizing five prescribed group-delay profiles with variations exceeding 210 ps while maintaining an average insertion loss of 0.256 dB per stage.

NP3: Quantum Devices, Systems, Networking and Computing

Conference Room 207, 2F

14:00-15:30 · November 2, 2026 · Monday

Integrated Photonics for Quantum Communications

Presider: Xiaomin Hu, University of Science and Technology of China, China

14:00-14:30 · ACP2026-0908-11 **Invited**

Quantum photonic frequency processing via electro-optic modulation

Yanxiao Gong[1*]

1.Nanjing University, China

I will introduce our two recent works. One is an experimental demonstrating of an integrated quantum photonic frequency processor. The other is a postselection-loophole-free Bell test with genuine energy-time entanglement.

14:30-15:00 · ACP2026-0902-13 **Invited**

Integrated Photonics for Quantum Communication Networks

Yun Zheng[1*]

1.Peking University, China

Integrated photonics offerscalable, low-cost, high-performance solutions for quantum communication networks. We review recent advances in photonic technologies for quantum communication, focusing on key components enabling securelarge-scale network implementation and real-world deployment.

15:00-15:15 · ACP2026-0715-11

Thin-Film SiN Moiré Photonic Molecule for Broadband Quantum Microcomb

Shuai Liu[1*], Xin Hua[1], Haotian Shi[1], Hongguang Zhang[1], Xi Xiao[1]

1.National Information Optoelectronics Innovation Center, China

We propose a thin-film SiN Moiré photonic molecule for programmable broadband dispersion engineering and theoretically predict >10 dB on-chip squeezing across a 2-THz bandwidth for scalable continuous-variable quantum microcomb generation.

15:15-15:30 · ACP2026-0715-129

Chip-to-Chip Polarization Entanglement Distribution on a Silicon Photonic Platform

Xu Yan[1], Xin Hua[1*], Yanxin Han[1], Shuai Liu[1], Lu Xu[1], Ying Zhu[1], Yanjing Zhao[1], Hongguang Zhang[1], Xi Xiao[1*]

1.National Information Optoelectronics Innovation Center, China

We demonstrate the first fully silicon-photonic two-node chip-to-chip polarization entanglement distribution system, achieving a maximum raw visibility of 0.869±0.005 (6.6% estimated QBER), providing a scalable architecture for entanglement-based quantum networks.

15:30-16:00 Coffee Break

16:00-17:30 · November 2, 2026 · Monday

High-dimensional quantum entanglement

Presider: Yanxiao Gong, Nanjing University, China

16:00-16:30 · ACP2026-0818-8 **Invited**

High-Dimensional Multiphoton Nonlocality and Its Metasurface-Based Implementation

Xiaomin Hu[1]

1.University of Science and Technology of China, China

We demonstrate high-dimensional multiphoton nonlocality using a high-fidelity three-photon qutrit GHZ state, efficient entanglement witnesses, and dimension-sensitive Bell inequalities, while exploring metasurface-enabled scalable generation of multiphoton entanglement for advanced quantum information applications in integrated platforms.

16:30-17:00 · ACP2026-0702-4 **Invited**

High-dimensional quantum entanglement and chip-scale quantum interconnects

Xiang Cheng[1*]

1.Huazhong University of Science and Technology, China

The realization of a high-rate, fault-tolerant quantum internet necessitates scalable photonic platforms that intrinsically support

high-dimensional Hilbert spaces and the multiplexing of multiple degrees of freedom (DOFs). This talk reports our recent experimental advances in both chip-integrated quantum logic and high-dimensional entanglement generation. Specifically, we demonstrate the first polarization-spatial-momentum quantum SWAP gate implemented on a silicon-on-insulator photonic chip. The gate operation is characterized by high process fidelity and the preservation of quantum coherence across the constituent DOFs, thereby functioning as a low-loss quantum interface that enables direct transduction between distinct photonic degrees of freedom for chip-to-chip quantum interconnects. Concurrently, we investigate high-dimensional time-frequency entanglement via a biphoton frequency comb, wherein we certify an effective Hilbert-space dimensionality of up to 648. Such high-dimensional entangled states constitute a fundamental resource for dense coding and noise-resilient quantum cryptography. To address the practical limitation of low distribution rates inherent to narrowband filtering, we propose and implement a singly-filtered scheme that significantly enhances the two-photon coincidence rate without compromising the dimensionality of the entangled state. The efficacy of this approach is validated through a proof-of-principle quantum key distribution (QKD) experiment. Collectively, these results establish an experimental pathway toward high-rate quantum networks, leveraging the combined advantages of on-chip manipulation and the large information capacity afforded by high-dimensional, multi-DOF photonic entanglement.

17:00-17:15 · ACP2026-0721-2

Quantum Two-Way Time Transfer with Adaptive Algorithmic Dispersion Compensation

Zhiyang Liu[1], Yunru Fan[1*], Tao Zhou[1], Hao Li[2], Lixing You[2], Guangcan Guo[1], Qiang Zhou[1*]

1.University of Electronic Science and Technology of China, China;2.Shanghai Institute of Microsystem and Information Technology Chinese Academy of Sciences, China

We demonstrate quantum two-way time transfer using an adaptive algorithmic dispersion-compensation method. By estimating the dispersion from the broadened coincidence histogram, the proposed method adaptively adjusts the compensation parameter and narrows the coincidence peak without using a hardware dispersion compensation module. The full width at half maximum of the histogram is reduced from 506 ps to 174 ps, and a time deviation of 1.65 ps at 10 s is achieved, compared with 4.10 ps and 2.14 ps at 10 s for the raw results without and with DCM, respectively. Our results pave the way for compact and low-loss quantum time transfer systems.

17:15-17:30 · ACP2026-0715-87

Machine Learning–Based Parameter Optimization of a Quantum Key Distribution System Under Limited Experimental Data

Xupeng Wang[1], **Hajar Bennouri**[1*], Dmitrii Briantcev[1], Dan Kilper[1]

1.Trinity College Dublin, Ireland

Quantum Key Distribution (QKD) systems require careful parameter tuning to maximise secret key generation performance under varying channel conditions. However, practical optimisation is often constrained by limited experimental throughput, as obtaining reliable Secret Key Rate (SKR) measurements can require lengthy acquisition periods. This paper investigates a machine-learning-assisted optimisation framework for a commercial ID Quantique Clavis XGR QKD system implementing the decoy-state BB84 protocol. A total of 510 experimental samples were collected across three channel attenuation levels (16.68 dB, 21.68 dB and 26.68 dB). Gaussian Process (GP) regression and Neural Network (NN) models were evaluated as surrogate models for predicting SKR from attenuation and protocol parameters. Experimental results show that GP models outperform NN models on limited datasets and provide reliable interpolation across operating conditions. The final optimisation framework achieved approximately 20% higher SKR than vendor-default settings over the evaluated attenuation range. These results demonstrate the potential of data-driven optimisation for practical QKD deployments where exhaustive parameter search is prohibitively expensive.

08:30-10:00 · November 3, 2026 · Tuesday

Quantum memory

Presider: Jianwei Tang, Huazhong University of Science and Technology, China

08:30-08:45 · ACP2026-0714-57

Efficient integrated quantum memory for light

Ruoran Meng[1]

1.USTC, China

By using membranes of Eu^{3+}:Y_2SiO_5 coupled with fiber-based microcavities, weachieve reliable integrated quantum storage with recordefficiencies of 75.2% for weak coherent pulses and 69.8% fortelecom-heralded single photons.

08:45-09:00 · ACP2026-0721-4

Properties of $^{167}Er^{3+}$:$LiNbO_3$ photonic quantum memory

Haoze Zhang[1], Yaoqing Zhang[1], Yunru Fan[1], Liang Zhai[1], Hao Li[2], Lixing You[2], Guangcan Guo[1], Qiang Zhou[1*]

1.University of Electronic Science and Technology of China, China;2.Shanghai Institute of Microsystem and Information Technology Chinese Academy of Sciences, China

We demonstrate a $^{167}Er^{3+}$:$LiNbO_3$ quantum memory for weak coherent optical storage. The memory achieves anon-chip storage efficiency of 5.36 ± 0.02% with storage time of135 ns. Our results demonstrate the potential of $^{167}Er^{3+}$:$LiNbO_3$for integrated quantum memory applications in the telecom band.

09:00-09:30 · ACP2026-0610-2 **Invited**

Metropolitan-scale Multiplexed Quantum Repeaters: Bell Non-locality and Applications

Zongquan Zhou[1*]

1.University of Science and Technology of China, China

Based on the multiplexed quantum repeater protocol using time measurements (MQR-TM), we have constructed a metropolitan-scale quantum repeater network, XingHan 2.0 [Nature Photonics, (2026)], extending our multiplexed quantum repeater from lab-scale demonstrations [Nature, 594, 41 (2021)] to city-scale deployment. In this talk, I will discuss our recent efforts in implementing quantum information tasks enabled by XingHan 2.0. I will also present our progress on long-lived and efficient quantum memories based on Eu:YSO [Nature Photonics 20, 437 (2026)].

09:30-10:00 · ACP2026-0902-5 **Invited**

Integrated quantum memory based on bound states in the continuum

Yuhui Chen[1]

1.Beijing Institute of Technology, China

Future quantum networks need scalablequantum memories. Hybrid silicon-erbium platforms are promising, yet suffer fromweak light-matter coupling. We exploitbound-in-continuum modes to enhance light absorption, achievingtelecom-band photon storage with bulk-comparable coherence on a silicon-foundry-compatible chip.

10:00-10:30 Coffee Break

10:30-11:45 · November 3, 2026 · Tuesday

Quantum Light Source

Presider: Fangxiang Wang, University of Science and Technology of China, China

10:30-11:00 · ACP2026-0506-1 **Invited**

Cavity-Enhanced Semiconductor Quantum Dot Quantum Light Source

Bang Wu[1*]

1.Beijing Academy of Quantum Information Sciences, China

This presentation covers novel cavity-enhanced quantum dot light sources: ultra-low-reflectivity micropillars enabling direct resonant excitation (purity 0.026), topological cavities for robust coupling, and a deterministic two-photon emitter achieving 98.3% two-photon contribution.

11:00-11:30 · ACP2026-0905-1 **Invited**

Indistinguishable single-molecule single photon sources

Jianwei Tang[1*]

1.Huazhong University of Science and Technology, China

We report an organic-inorganic hybrid integrated quantum photonic platform and demonstrate near-perfect on-chip two-photon Hong-Ou-Mandel quantum interference between indistinguishable single photons from independent molecules, a key step towards scalable optical quantum information processing.

11:30-11:45 · ACP2026-0701-96

Experimental Demonstration of Quantum Key Distribution and Classical Communications Co-propagation over Diverse 100 km+ Fibers

Weiwen Kong[1], Tianqi Dou[1], Zhenhua Li[1], Lipeng Feng[1], Lei Zhang[2], Song Gao[3], Zhengjun Pan[4], Nan Lu[5], Jianjun Tang[1]

1.China Telecom Research Institute, China;2.State Key Lab. of Opt. Fib. and Cab. Manuf. Tech.YOFC, China;3.QuantumCTek Corporation Limited, China;4.Huawei Technologies Co., Ltd.,, China;5.ZTE Corporation, China

We demonstrate our experimental work on QKD and classical communication co-propagation over diverse 100 km+ fibers (SMF/FMF/MCF/HCF) using commercial devices. Systematic performance with classical capacities of 1~374.4 Tbps and secure key rate >2 kbps is demonstrated, and offering deployment insights for quantum-classical network integration.

13:30-15:30 · November 3, 2026 · Tuesday

Quantum Communication over Fiber Channels

Presider: Xiang Cheng, Huazhong University of Science and Technology, China

13:30-14:00 · ACP2026-0619-1 **Invited**

Microcomb-driven large-scale fully-connected quantum network

Fangxiang Wang[1*], Guowei Zhang[1], Shengteng Zheng[1], Long Huang[2], Wenfu Zhang[2*], Wei Chen[1*]

1.University of Science and Technology of China, China;2.Xi'an Institute of Optics and Precision Mechanics, Chinese Academy of Sciences, China

The talk is about our recent works onintegrated soliton microcomb (SMC) and photonic encoding chips, and a large-scale fully connected quantum network without trusting the network provider.

14:00-14:30 · ACP2026-0602-1 **Invited**

Deterministic entanglement-assisted quantum communication over fiber channels

Siyu Ren[1], Yanru Yan[1], Dongmei Han[1], Meihong Wang[1,2], Xiaolong Su[1,2*]

1.State Key Laboratory of Quantum Optics Technologies and Devices, Institute of Opto-Electronics, Shanxi University, China;2.Collaborative Innovation Center of Extreme Optics, Shanxi University, China

Quantum communication is evolving toward practical applications. Based on the distributed entangled states, we realize deterministic entanglement-assisted quantum communication over 20-km unidirectional/10-km bidirectional fiber links, and dual-image transmission (BER 1E-5) at 1 km.

14:30-15:00 · ACP2026-0602-2 **Invited**

Experimental distributed-phase-reference quantum key distribution with information theoretic security

Xiaoyu Cao[1*]

1.Nanjing University, China

This work experimentally demonstrates information-theoretically secure DPR-QKD, including COW-QKD and DPS-QKD, closing key security loopholes while preserving simple modulation.Its simple transmitter module makes it a promising building block to future quantum networks.

15:00-15:15 · ACP2026-0622-5

First Real-Time Bidirectional Same-Wavelength CV-QKD at 2×100 kbps over an 11.5 dB-loss Hollow-Core Fiber Link

Yuqian Zhang[1], Dong Wang[1], Sheng Liu[1], Dawei Ge[1], Mingqing Zuo[1], Han Li[1], Dechao Zhang[1*]

1.Department of Fundamental Network Technology, China Mobile Research Institute, China

We demonstrate bidirectional same-wavelength CV-QKD over an 11.5 dB-loss HCF link. Two independent systems operate stably with frequency separations from −700 to 700 MHz, achieving a total SKR of 200 kbps and negligible crosstalk.

15:15-15:30 · ACP2026-0702-8

Integrated QKD-OTDR Co-Transmission System for Real-Time Fiber Eavesdropping Detection and Localization

Dongchen Zhang[1*], Wen Zuo[2], Hu Shi[2], Dapeng Liang[2], Yan Zhao[2], Baoluo Yan[2], Shikui Shen[3], Kezhi Qiao[4], Yangguang Liu[5]

1.Beijing Zhongxing Guangtai Software Company Limited, China;2.WDM System Department of Wireline Product R&D Institute, ZTE Corporation, China;3.China Unicom Research Institute, Beijing, China, China;4.State Key Laboratory of Mobile Network and Mobile Multimedia Technology, China;5.WDM System Department of Wireline Product R&D Institute, China

Optical Time Domain Reflectometer (OTDR)helps solve inaccurate attack, eavesdropping identification andlocalization issues in practical Quantum Key Distribution(QKD). We propose an integrated QKD-OTDR system,systematically study OTDR parameter effects on QKDperformance, realize uninterrupted real-time securitymonitoring, and provide a practical solution for efficient QKD networks operation.

15:30-17:30 Coffee Break & Poster Session

NP4: Materials, Nanofabrication, and Characterization Techniques

Conference Room 101, 1F

13:30-15:30 · November 2, 2026 · Monday

Materials, Nanofabrication, and Characterization Techniques (1)

Presider: Yuanlin Zheng, Shanghai Jiao Tong University, China

13:30-14:30 · ACP2026-0902-4 **Tutorial**

Optical neural networks enabled by direct laser writing

Qiming Zhang[1]

1.University of Shanghai for Science and Technology, China

This tutorial systematically introduces femtosecond direct laser writing technologies, diverse optical neural network architectures, cutting-edge applications, and discusses recent advances and key challenges in high-performance all-optical neuromorphic computing and ultrafast intelligent optical signal processing.

14:30-15:00 · ACP2026-0801-4 · **Invited**

Performance and Mechanism Research of Two-dimensional Polarized Photodetectors

Wei Xin[1*]

1.Northeast Normal University, China

Our work summarizes the principles, applications, and future prospects of 2D-material-based polarized photodetection, emphasizing the role of light vector characteristics and vectorial transformations during transmission.

15:00-15:30 · ACP2026-0903-3 · **Invited**

Hyperbolic Metamaterial based fiber plasmonic sensor and its biomedical sensing application

Yunhan Luo[1]

1.Jinan University, China

This work proposes an SPR tuning theory based on multi-dimensional hypersurfaces. Through dispersion management of hyperbolic metamaterials and magneto-optical effect regulation, the sensitivity, detection range, and figure of merit of SPR sensors are significantly enhanced, demonstrating great potential for biomedical and magnetic field sensing applications.

15:30-16:00 Coffee Break

16:00-17:30 · November 2, 2026 · Monday

Materials, Nanofabrication, and Characterization Techniques (2)

Presider: Qiming Zhang, University of Shanghai for Science and Technology, China

16:00-16:30 · ACP2026-0818-6 · **Invited**

Nanofabrication of thin-film lithium niobate photonic crystals for deep sub-wavelength photonics

Yuanlin Zheng[1*]

1.Shanghai Jiao Tong University, China

High-quality Moiré superlattice in thin-film lithium niobate (TFLN) is fabricated for efficient second-harmonic generation of focused beams containing broad oblique wavevector components, advancing TFLN Moiré superlattices as a versatile platform for compact, integrated nonlinear photonics.

16:30-17:00 · ACP2026-0909-2 · **Invited**

Progress in Light-Matter Interactions in 2D Materials from Visible to THz

Jianbin Xu[1*]

1.The Chinese University of Hong Kong, Hong Kong, China

A comprehensive understanding of optoelectronic and photonic properties in hierarchically stacked two-dimensional materials and at hetero-interfaces is essential for high-performance device design. By meticulously engineering the interplay between matter and nanophotonic structures, we find new attributes of light-matter interaction that were previously unavailable. In this presentation, we highlight a series of innovative advances from our group in van der Waals (vdW) materials and hybrid nanophotonic platforms. We demonstrate: (1) polariton hybridization ranging from Fano-type interference to high-Q etch-free vdW metasurfaces and actively tunable Kerker scattering, realized through self-coupled polaritonic platforms grown by CVD bottom-up methods; (2) interlayer exciton engineering that reveals giant dipole moments via precise layer control and attains deterministic areal emission enhancement through plasmonic lattice-on-mirror architectures; (3) room-temperature active valley polarization control in WSe_2 enabled by the

synergistic action of chiral metasurfaces and hot-carrier injection; and (4) photonic–2D-material hybrids that extend these coherent interactions into the THz regime, yielding unique optoelectronic functionalities. Collectively, these results establish new design principles for polaritonic, excitonic, and valleytronic devices operating from the visible to the THz spectral range.

17:00-17:30 · ACP2026-0828-4 · **Invited**

Light- and Thermally Driven Self-Organization of Metallic Nanoparticle Arrays for Photonic Applications

Xiaoqin Wu[1*]

1.Chongqing University, China

We present light- and thermally driven self-organization strategies for fabricating highly uniform plasmonic nanoparticle arrays with tunable periodicities, enabling narrowband resonances, structural colors, hybrid photonic resonators, and advanced information applications.

08:30-10:00 · November 3, 2026 · Tuesday

Materials, Nanofabrication, and Characterization Techniques (3)

Presider: Wei Xin, Northeast Normal University, China

08:30-09:00 · ACP2026-0902-8 · **Invited**

Nanostructure Lattices and Their Nanophotonic Devices

Shikai Deng[1*]

1.Shanghai Institute of Microsystem and Information Technology, China

In this talk, we will share our recent progress on design and device demonstration of nanostructure lattices with tailored optical responses.

09:00-09:30 · ACP2026-0909-1 · **Invited**

Ultrafast laser-assisted etching of glass: From fabrication to device applications

Jian Xu[1*]

1.East China Normal University, China

We demonstrate our newly developed ultrafast laser-assisted etching techniques for 3D glass microstructures, including polarization-independent etching, large-scale, high-precision microstructuring and deep, high-aspect-ratio microstructuring, together with exploratory applications in microfluidics, optofluidics, microscale separation, and organ-on-chip systems.

09:30-09:45 · ACP2026-0715-136

Superior Optical Gyromagnetic Response in a Magneto-Optical Metagrating

Tong-Huai Cheng[1], Jingyi Tian[1*], Feng Luo[2*], Jun Qin[3*], Weihao Yang[3], Lei Bi[3*]

1.Westlake University, China;2.Nankai University, China;3.University of Electronic Science and Technology of China, China

We report a magneto-optical metagrating with strong gyromagnetic response at optical frequencies, resulting from the excitation of surface plasmon resonance and waveguide mode. The equivalent off-diagonal element of permeability tensor is up to ~0.46, representing the highest level to date.

09:45-10:00 · ACP2026-0701-57

Permanent Tuning of Silicon Photonic Devices by Multiple Near-Infrared Femtosecond Laser Pulses

Ruoheng Zhang[1*]

1.University of Alberta, Canada

In this work, we demonstrate high-precision permanent tuning of silicon photonic devices using multi-shot nearinfrared femtosecond laser irradiation at a wavelength of 1030 nm. Using a superluminescent diode and an Optical Spectrum Analyzer allows the resonance wavelength of silicon microring resonators to be measured after irradiation within a minute, making it possible to track shot-to-shot wavelength shifts during laser exposure. Using silicon microring resonators, we achieved a permanent resonance tuning resolution of 0.82 ± 0.7 pm with a nearly constant round-trip loss of 0.47 ± 0.02 dB by using pulse energy of 5.3 nJ at a laser fluence of 0.016 J/cm2 . The tuning resolution is the smallest value reported for a permanent tuning method in silicon photonics to our knowledge, and is comparable to conventional thermo-optic tuning with microheaters. As practical applications of the method, we discussed how to tune the resonance wavelength of a silicon microring resonator requires a small shift or relative large shift, and we also performed tuning of a 1 × 3 wavelength DEMUX, achieving high wavelength accuracy with negligible extra loss. These results show that multi-shot femtosecond laser irradiation is a practical method for low-loss, high-precision post-fabrication correction of silicon photonic circuits.

10:00–10:30 Coffee Break

10:30-12:00 · November 3, 2026 · Tuesday

Materials, Nanofabrication, and Characterization Techniques (4)

Presider: Jian Xu, East China Normal University, China

10:30-11:00 · ACP2026-0823-2 · **Invited**

Polarization and chiral metasurface devices based on symmetry-breaking engineering

Zilan Deng[1*]

1.Jinan University, China

We achieve intrinsic optical chirality in planar metasurfaces without 3D fabrication, using symmetry-broken BIC resonances. This strategy enables flexible tuning of chirality and Q factors simultaneously, offering a practical platform for chiral light emission, nonlinear optics, and quantum photonic applications.

11:00-11:30 · ACP2026-0902-12 · **Invited**

Two-Photon Lithography via Metasurface

Hui Gao[1*]

1.Huazhong University of Science and Technology, China

Traditional laser systems are often bulky, single-function, with low integration. Taking two-photon lithography, this study shows how metasurfaces provide a new platform for realizing highly integrated optical systems.

11:30-11:45 · ACP2026-0626-9

Inverse Design of Metasurfaces for Laplace Differentiators

Haogen Yuan[1], Sichao Shan[2], Qi Sun[3], Zhitong Li[2*], Tianyue Zhang[1,4*]

1.School of Integrated Circuits, Beijing University of Posts and Telecommunications, China;2.School of Physical Science and technology, Beijing University of Posts and Telecommunications, China;3.School of Electronic Engineering, Beijing University of Posts and Telecommunications, China;4.State Key Laboratory of Information Photonics and Optical Communications, Beijing University of Posts and Telecommunications, China

Surrogate-assisted inverse design identifies hollow-pillar silicon metasurfaces for optical Laplace differentiation. FDTD, OTF and image-level tests verify single-wavelength and broadband candidates for edge-enhancing spatial filtering.

11:45-12:00 · ACP2026-0728-3

Ice Lithography Using Dicobalt Octacarbonyl on Silicon, Filter Paper, and Living Tardigrades

Zhirong Yang[1], Limin Qi[1], Kang Zhao[1*], Ding Zhao[1*], Min Qiu[1*]

1.Westlake University, China

We demonstrate ice lithography using dicobalt octacarbonyl as a negative-tone metal-organic resist on silicon, filter paper, and a tardigrade. Cross-linked patterns remained after sublimation, and the tardigrade recovered activity after rehydration.

NP4: Materials, Nanofabrication, and Characterization Techniques

Conference Room 103B, 1F

13:30-14:15 · November 3, 2026 · Tuesday

Materials, Nanofabrication, and Characterization Techniques (5)

Presider: Shikai Deng, Shanghai Institute of Microsystem and Information Technology, China

13:30-13:45 · ACP2026-0714-10

Multiscale Insights into Ultrafast Laser-Induced Dynamics through Coupled Two-Temperature Model and Molecular Dynamics

Prem Dheeraj Martha[1*]

1.Indian Institute of Technology Bombay, India

Ultrafast laser ablation, particularly with femtosecond (fs) lasers, has emerged as a cutting-edge technique for precision material processing, enabling highly localized ablation. The ultra-short pulse duration (on the order of 10^{-15} seconds) triggers rapid heating and material removal before significant heat diffusion occurs. Despite its impressive advantages, understanding the underlying physics of fs laser-material interactions remains a challenge due to the complexity of processes occurring across multiple temporal and spatial scales. This study presents a multiscale hybrid modeling approach to fs laser heating in gold substrates, integrating the Two-Temperature Model (TTM) with Molecular Dynamics (MD) simulations within the LAMMPS framework using the Embedded Atom Method (EAM) potential. The TTM governs energy exchange between the electron and lattice subsystems, while MD tracks atomic-scale responses such as thermal expansion, surface deformation, and material ejection. This approach enables a high-fidelity representation of laser-induced surface modifications that are otherwise difficult to capture through classical thermal models. Validated against published studies, the TTM-MD model investigates surface heating dynamics under fs laser fluences of 35–70 mJ/cm². Simulations reveal that the substrate surface reaches peak temperatures exceeding 5000 K within 7–10 ps, initiating significant thermal expansion and surface restructuring. This model provides a robust computational framework for optimizing fs laser processing techniques while retaining atomic-scale resolution. It is well-suited for exploring a broad spectrum of laser-matter interactions, including multi-pulse effects, multiscale simulation volumes, and diverse material systems. Its adaptability enables the study of cumulative energy deposition, phase transitions, and defect formation under varying processing conditions, making it invaluable for applications where precision is paramount.

13:45-14:00 · ACP2026-0715-161

A SAM2-Based Model for Automatic Segmentation and Characterization of Quantum Dots

Yuerui Wu[1], Ruitong Wang[1], Xin Yan[1*], Xia Zhang[1*]

1.Beijing University of Posts and Telecommunications, China

We propose a segmentation model based on SAM2that fuses intensity and edge cues for dense quantum-dot segmentation and automatic characterization, achieving Dice 0.9261, mIoU 0.8659.

14:00-14:15 · ACP2026-0728-1

Spectrally Tunable Electromagnetically Induced Transparency Resonances in All-dielectric Metasurfaces

Feng Liu[1], Lei Liu[1], Mingke Jin[1], Jingyi Tian[1*], William Shieh[1*]

1.Westlake University, China

We demonstrate spectrally-tunable EIT resonances in an all-dielectric silicon nanodisk and nanobar metasurface, achieving geometry-controlled spectral tuning through multi-parameter optimization and experimental validation of resonance shifts and coupling evolution.

15:30–17:30 Coffee Break & Poster Session

Best Top-Score Paper Award Competition Session

November 1, 2026 · Conference Room 207, 2F

D-Track Presider: **Xingchen Ji,** Shanghai Jiao Tong University, China

08:30-08:45 · ACP2026-0701-146 Top-Score Paper

High-Fidelity Integer Factorization by QUBO Optimization on a Photonic Ising Chip

Kun Liu[1], Xin Ye[1], Luyu Si[1], Wenjia Zhang[1*], Zuyuan He[1]

1.Shanghai Jiao Tong University, China

We demonstrate a hardware-assisted 32-bit integer factorization workflow that optimizes a QUBO-derived factorization energy model with a packaged photonic Ising chip. The Ising machine enabled by a multichannel cascaded Mach-Zehnder modulators provides the 7-bit calibrated optical readouts used to evaluate energy differences in order for performing spin flipping, Metropolis updating, and candidate factors verification. On a retained optimized five-instance set of 32-bit QUBO-derived block factorization models, the best optical-path annealing runs increase the aggregate factorization success count from 5/250 for direct bit flips and 22/250 for circuit annealing simulation to 91/250. These results demonstrate that a calibrated photonic chip can serve as a practical and scalable accelerator for hardware-assisted QUBO factorization, paving the way toward photonic-enabled large-scale integer factorization.

08:45-09:00 · ACP2026-0715-178 Top-Score Paper

A 1.2 dB Insertion Loss on-Chip Mach-Zehnder Interferometer Type Optical Isolator Based on Stoichiometric Ce:YIG Magneto-Optical Thin Films

Di Wu[1], Zhenyuan Ren[1], Tianchi Zhang[1], Zixuan Wei[1], Jun Qin[1], Lei Bi[1*]

1.University of Electronic Science and Technology of China, China

We demonstrate a heterogeneously integrated Mach-Zehnder interferometer optical isolator on a silicon nitride platform. By eliminating intragranular defects in Ce:YIG films, the device achieves a record-low insertion-loss of 1.2 dB and 27.6 dB isolation ratio.

09:00-09:15 · ACP2026-0701-63 Top-Score Paper

Inverse-designed Waveguides Enable Sub-picometer Resolution Spectrometer over 700nm Bandwidth

Hao He[1], Zengji Tu[1], Lin Chang[1*]

1.Peking University, China

We demonstrate a compact and high-performance on-chip spectrometer. By employing inverse design along the sidewalls of a single waveguide, this chip achieves a record full-width at half-maximum of 0.25 pm and an operation bandwidth over 700 nm.

09:15-09:30 · ACP2026-0729-4 Top-Score Paper

Slow-Light Modulator Based on Localized Mode-Recycling in Thin-Film Lithium Tantalate

Jiaxuan Gan[1], Weihan Wang[1], Zexu Wang[1], Mingyu Zhu[1], Aoyun Gao[1], Fei Huang[1], Zejie Yu[1], Weike Zhao[1*], Daoxin Dai[1*]

1. Zhejiang University, China

Electro-optic modulators face an inherent trade-off between device footprint and operating bandwidth, which fundamentally limits their large-scale integration in modern optical communication networks. Herein, we develop a compact slow-light Mach-Zehnder interferometer (MZI) modulator based on thin-film lithium tantalate (TFLT). The core mechanism employs a series of Bragg gratings to manipulate optical signals. Lightwaves undergo round-trip reflection within a confined region via multiple modes to establish an equivalent slow-light effect, thereby enhancing electro-optic modulation. To introduce a microwave slow-wave effect and perfectly match the optical group index, capacitively loaded T-shaped electrodes are utilized, delivering a matched index of 3.43. The fabricated MZI modulator features an active length of merely 2.15 mm and a low insertion loss of 2 dB. Measurements show a half-wave voltage-length product $V\pi \cdot L$=1.9 V·cm, and the electro-optic response exhibits only 0.87 dB roll-off at 67 GHz. Furthermore, 100-Gbaud PAM-4 optical signal transmission is experimentally demonstrated with the device, providing a highly scalable technical route for next-generation optical transceivers.

09:30-09:45 · ACP2026-0715-119 Top-Score Paper

Nonlinear dynamics in heterogeneously integrated III-V-on-Si microring lasers with on-chip delayed optical feedback

Yue Niu[1], Andrew W. Poon[1*]

1.The Hong Kong University of Science and Technology, Hong Kong, China

Microring lasers offer a compact integrated light source with rich nonlinear dynamics including self-pulsation, bistability, and chaos arising from counterpropagating mode interactions. These intrinsic nonlinearities and internal memory make them suitable for photonic reservoir computing. We develop a robust chip-scale fabrication process for heterogeneously integrated III-V-on-Si microring lasers and semiconductor optical amplifiers. Microring lasers (radius 48 μm) exhibit a threshold current density of 1.3 kA·cm-2 and 36.6 dB side-mode suppression ratio. Crucially, we present the first experimental demonstration of feedback-strength-dependent nonlinear dynamics in microring lasers with on-chip tunable delayed feedback, including single-to-multimode switching and oscillatory regimes.

09:45-10:00 · ACP2026-0715-20 Top-Score Paper
Impact of Wavelength Detuning on 100-Gb/s-PAM4 EML Performance and its Systematic Operating-Point Search
Koichi-H Huang[1*], Jian Fang[1], Ming Yu[1], Xiaoli Ge[1], Chen Gao[1], Zhongbao Wu[1], Jiaheng Jing[1], Cedric Gao[1], Kaifeng Yang[1]
1.Zetta Semiconductor Co., Ltd., China
We have demonstrated that wavelength detuning governs absorption, optical power, RF response, and PAM4 quality in EMLs. A pseudo-FoM identifies optimal bias, validated through 100-Gb/s PAM4 measurements, enabling systematic operating-point optimization.

10:00-10:30 Coffee Break

10:30-10:45 · ACP2026-0701-24 Top-Score Paper Industry Innovation Nomination
A 4×128 Gbps 7.8pJ/b Compact Integrated Transmitter with Silicon Slow-Light Modulator
Erse Jia[1], Weisheng Wang[1], Jun Li[1], Haiwen Cai[1], Nan Qi[2], Fenghe Yang[1*], Wei Chu[1*]
1.Zhangjiang Laboratory, China;2.Institute of Semiconductors, China
A 4-channel high-speed hybrid-integrated transmitter for LPO is designed in 90 nm SiGe BiCMOS and 300 mm SiPh, consisting of a linear driver wire-bonded to a co-design silicon slow-light MZM. Measurement results demonstrate 128 Gbps per channel PAM-4 optical eye diagrams.

10:45-11:00 · ACP2026-0703-1 Top-Score Paper
Electrically Tuned High-Performance III-V/Lithium Tantalate External-Cavity Laser
Xiaoying Guo[1], Xiao Wu[2], Yuyao Guo[1,3*], Yu Li[1,3], Liangjun Lu[1,3], Yang He[2], Cheng Zeng[2], Jinsong Xia[2*], Jianping Chen[1,3], Linjie Zhou[1,3]
1.State Key Laboratory of Photonics and Communications, Department of Electronic Engineering, Shanghai Jiao Tong University, China;2.Wuhan National Laboratory for Optoelectronics and School of Optical and Electronic Information, Huazhong University of Science and Technology, China;3.SJTU-Pinghu Institute of Intelligent Optoelectronics, China
We demonstrate a high-performance III-V/lithium tantalate Pockels laser featuring 28.7-mW output power, 115.6-nm tuning range, and 260-Hz intrinsic linewidth. The laser enables agile FMCW ranging with 17-cm precision over 250-m fiber at 100-kHz modulation rate.

11:00-11:15 · ACP2026-0715-40 Top-Score Paper
An End-to-End 850-nm VCSEL-Based Optical Wireless Link Supporting 130-Gb/s NRZ and 180-Gb/s PAM-4 Transmission
Peng Yan[1], Shenghui Wu[2], Yunhao Zhang[1], Yu Sun[3], Zhen Zhen[2], Qijie Xie[2], Lei Wang[2*], Haowen Shu[1*], Xingjun Wang[1*]
1.Peking University, China;2.Pengcheng Laboratory, China;3.Beijing Information Science and Technology University, China
We experimentally demonstrate an end-to-end 850- nm VCSEL-based optical wireless communication link over a 1-m free-space path with offline Volterra-series nonlinear equalization. The link achieves 130-Gb/s NRZ and 180-Gb/s PAM-4 transmission, with both highest-rate signals remaining below the 20% soft-decision forward-error-correction threshold.

11:15-11:30 · ACP2026-0714-28 Top-Score Paper Industry Innovation Nomination
Monolithic SiN Passive Front-End for Polarization-Insensitive CWDM Applications
Qingyang Du[1]
1.Zhejiang Lab, China
We present a monolithic SiN passive platform for CPO, integrating ECs, PSRs, CWDM filters, and VCs in a 400-nm SiN layer via 12-inch CMOS. Wafer results: EC 1.7 dB (0.3 dB PDL), PSR PER 16.6 dB (loss 0.2 dB), CWDM loss 1.2 dB (crosstalk −14 dB), VC 44.1 mdB. SiN enables heater-free operation.

11:30-11:45 · ACP2026-0701-36 Top-Score Paper
High-Power-Tolerant and Low-Loss Si-SiN Interlayer Coupler Based on a Double-Tapered Adiabatic Structure
Tianqi Song[1], Ningyu Zhang[1], Jing Wang[1*]
1.Southern University of Science and Technology, China
We demonstrate a double-tapered adiabatic Si-SiN interlayer coupler achieving a 0.084-dB insertion loss at 1550 nm and a 1.5-dB enhancement in continuous-wave power tolerance compared to a single-tapered reference device.

11:45-12:00 · ACP2026-0715-153 Top-Score Paper
A compact 32-channel reconfigurable spectral processor based on a Loopback Arrayed Waveguide Grating
Haoran Zhang[1], Xiaotian Zhu[2], Brent E. Little[3], Sai T. Chu[2*], Xingyuan Xu[1*]
1.Beijing University of Posts and Telecommunications, China;2.City University of Hong Kong, Hong Kong, China;3.QXP Technology Inc., China
We present a compact 32-channel reconfigurable spectral processor based on a loopback arrayed waveguide grating (AWG) and experimentally demonstrate its capability for flexible microcomb spectral shaping.

T-Track Presider: **Liu Liu,** Zhejiang University, China

13:30-13:45 · ACP2026-0701-127 Top-Score Paper **Industry Innovation Nomination**

First Real-time 128Tb/s and 256Tb/s Unrepeatered Field Trial using 400Gbps and 800Gbps OTN transponders over Field-deployed 137.76-km Ultra-low-loss Multi-core Fiber Link

Zilin Fan[1], Chao Wu[1], Jian Cui[1*], Yu Deng[1], Zhuo Liu[1], Yuxiao Wang[2], Yufeng Han[3], Nan Sun[3], Yue Tian[4], Bin Hao[1], Bin Wu[2], Jinggang Cao[2], Yong Chen[2], Shang Cao[4], Zhihui Dong[3], Wei Sun[3], Yanchun Zhang[3], Cheng Chang[1], Yan Sun[1], Bing Yan[2], Ninglun Gu[1]

1.Department of Networks, China Mobile Communications Group Co., Ltd., China;2.Network Management Center, China Mobile Communications Group Shandong Co., Ltd., China;3.Jiangsu Hengtong Optic-Electric Co., Ltd., China;4.Huawei Technologies Co.,Ltd., China

First real-time unrepeatered 137.76-km field trial over field-deployed ultra-low-loss large-effective-aera 4-core fiber cable using 400Gbps and 800Gbps backbone OTN transponders is demonstrated, which achieves bit rates of 128Tb/s and 256Tb/s respectively.

13:45-14:00 · ACP2026-0701-229 Top-Score Paper

Photonic Integrated Complementary Carrier-Extracted Self-Coherent Receiver Enabled by Add-drop Resonators

Haojie Zhu[1], Zhengrong Zhao[1], Jinhong Xu[2], Boshu Sun[1], Yuhao Fang[1], Weiqi Lu[1], Dayu Shi[1], Jiwei Xie[1], Puzhen Yuan[1], Jingchi Li[3], Lan Li[1,2], Yikai Su[3], William Shieh[1,2*]

1.Westlake University, China;2.Westlake Institute for Optoelectronics, China;3.Shanghai Jiao Tong University, China

Based on the bandpass and bandstop characteristics of the add-drop racetrack resonators, we demonstrate an integratedcomplementary carrier-extracted self-coherent receiver on the silicon photonic platform, achieving 360-Gb/s data rate over 50-km SSMF.

14:00-14:15 · ACP2026-0715-118 Top-Score Paper

Real-time 48-Tb/s C+L Band Transmission over 412.36 km Hollow-core Fiber with 800 Gb/s/λ

Shuchao Mi[1], Xu Zhang[1*], Xingfeng Li[1], Honglin Ji[1], Qibing Wang[1], Yeping Lai[1], Ming Jiang[1], Jingbin Feng[1], Chao Li[1], Wei Ding[2], Zhixue He[1*], Shaohua Yu[1]

1.Pengcheng Laboratory, China;2.Jinan University, China

A real-time C+L band transmission system over 412.36 km hollow-core fiber achieving a total capacity of 48 Tbit/s by using commercial 800G coherent optical modules.

14:15-14:30 · ACP2026-0701-35 Top-Score Paper **Industry Innovation Nomination**

Real-time 24λ×1.6 Tb/s Transmission over 960km G.652.D Fiber on Super C Band Using 230 Gbaud 64-QAM-PCS Signals

Lingling Hu[1], Mingqing Zuo[1], Zihan Li[2], Shiyu Qin[2], Dawei Ge[1], Dong Wang[1], Dechao Zhang[1*]

1.China Mobile Research Institute, China;2.Huawei Technologies Co.,Ltd, China

We demonstrate a real-time 1.6-Tb/s 230-GBaud dual-subcarrier WDM system over 960-km G.652.D fiber using EDFAs. All 24 channels achieve error-free operation with 1.2-dB OSNR margin (σ=0.28), marking the first demonstration to simultaneously achieve 1.6 Tb/s and 900 km.

14:30-14:45 · ACP2026-0701-125 Top-Score Paper

Modeling and Performance Analysis of Distributed Time-Varying Optical Fiber Channels

William Shieh[1], **Weiqi Lu**[1*]

1.Westlake University, China

We propose a general model for distributed time-varying (DTV) optical channels. We analytically derive equalization-enhanced time-varying interference (EETI), quantifying performance degradation caused by the interplay between long dispersive memory and fast channel dynamics.

14:45-15:00 · ACP2026-0701-123 Top-Score Paper

First Real-time 256Tb/s 8×68.88-km and 384Tb/s 5×68.88-km Field Trials using 800Gbps and 1.2Tbps OTN Transponders over Field-deployed ULL MCF Cable

Jian Cui[1*], Yu Deng[1], Zhuo Liu[1], Yuan Li[1], Yuxiao Wang[2], Yue Tian[3], Yufeng Han[4], Nan Sun[4], Chao Wu[1], Zilin Fan[1], Bin Hao[1], Jinggang Cao[2], Yong Chen[2], Bin Wu[2], Shang Cao[3], Zhihui Dong[4], Wei Sun[4], Yanchun Zhang[4], Cheng Chang[1], Yan Sun[1], Bing Yan[2], Ninglun Gu[1]

1.Department of Networks, China Mobile Communications Group Co., Ltd., China;2.Network Management Center, China Mobile Communications Group Shandong Co., Ltd., China;3.Huawei Technologies Co.,Ltd., China;4.Jiangsu Hengtong Optic-Electric Co., Ltd., China

Real-time 256Tb/s 8×68.88-km and 384Tb/s 5×68.88-km field trials using C+L-band 800Gbps/1.2Tbps OTN transponders are demonstrated, which is achieved over high-performance ultra-low-loss large-effective-aera 4-core fiber cable.

15:00-15:15 · ACP2026-0701-155 Top-Score Paper **Industry Innovation Nomination**

Low-Complexity Cascaded Error Feedback Noise Shaping with Residual In-Band Noise Suppression Achieving Over 10 dB SNR Gain for Fronthaul

Yicheng Xu[1], Yixiao Zhu[1], Yongxin Sun[1], Weisheng Hu[1], Qunbi Zhuge[1*]

1.Shanghai Jiao Tong University, China

We propose a low-complexity 2-bit cascaded error feedback noise shaping (CEFNS) scheme. By using simple-structured FIR filters, a 2-GHz 65536-QAM signal is delivered at 69.2 dB SNR, showing ~10 dB gain over single-stage 2-bit EFNS.

15:15-15:30 · ACP2026-0701-140 Top-Score Paper
Fast and Accurate Waveform-Level Channel Modeling Using Deep Learning for 300 GBaud S+C+L-band systems
Mingzhe Chen[1], Minghui Shi[1], Zekun Niu[1*], Kaiyan Jin[1], Junzhe Xiao[1], Weisheng Hu[1], Lilin Yi[1*]
1.Shanghai Jiao Tong University, China
We propose a Channel Decoupling Method and Temporal-Recurrent and Channel-Attention Network for waveform-level channel modeling in 300~GBaud S+C+L-band systems. It achieves \textless0.2~dB Q-factor error and 97.9\% complexity reduction versus SSFM, outperforming BiLSTM- and Transformer-based baselines, enabling rapid performance evaluation and launch power optimization.

15:30-16:00 Coffee Break

16:00-16:15 · ACP2026-0609-1 Top-Score Paper
Optical Frequency Comb-Assisted Multiband RF Signal Generation Using Actively Phase-Stabilized Spectral Stitching
Jincong Hu[1], Xihua Zou[1*], Ningyuan Zhong[1]
1.Southwest Jiaotong University, China
We propose an optical frequency comb-assisted multiband RF generation system using an active PLL. Reducing DAC sampling rates by 50%, it can synthesize 120-Gbit/s communication or 20-GHz LFM signals for flexible radar and communications.

16:15-16:30 · ACP2026-0715-154 Top-Score Paper
Codeword-Error-Ratio-Based Transmitter Compliance Metric for High-Speed Optical Interconnects with DFE-Based Receivers
Leyan Fei[1], Yongxin Sun[1], Yicheng Xu[1], Haiyun Xin[2], Weisheng Hu[1], Qunbi Zhuge[1*]
1.State Key Laboratory of Photonics and Communications, School of Information Science and Electronic Engineering, Shanghai Jiao Tong University, China;2.Huawei Technologies Co., Ltd, China
We propose a novel codeword error ratio (CER)-aware transmitter and dispersion eye closure quaternary (TDECQ) metric for PAM4 transceivers based on a decision feedback equalizer (DFE). By utilizing generating function matrices, it jointly models transmitter impairments and DFE error propagation. Simulations and experiments show that our proposed DFE-CER-TDECQ metric can reflect the influence of time-varying transmitter impairments and DFE propagation on FEC performance. This metric accurately evaluates the received optical power (ROP) penalty introduced by the transmitters in the perspective of FEC codeword error ratio for DFE-based systems.

16:30-16:45 · ACP2026-0715-209 Top-Score Paper
1.08-Tb/s Visible-Light Optical Interconnect Using a 50-Channel PDM Transceiver
Xinyi Liu[1], Yunkai Wang[1], Zhuoran Hu[1], Zengyi Xu[1], Suning Guan[1], Nan Chi[1*]
1.Key Laboratory for the Information Science of Electromagnetic Waves Fudan University, China
To meet rapidly growing data-center optical-interconnect demands, we demonstrate a 1.0847-Tb/s visible-light link enabled by high-speed laser diodes and coordinated DSP, using a 50-channel prototype transceiver with polarization-division multiplexing.Over a 1-m free-space link, all 100 branches achieve BERs below the 7% HD-FEC threshold.

16:45-17:00 · ACP2026-0701-27 Top-Score Paper
Demonstration of 10 Mbps Deep-Space Optical Uplink Communication at 0.711 Signal Photocounts per Information Bit
Yu Miao[1,2], Yueying Zhan[1], Xiaowei Wu[1], Yang Sun[1,2], Yinan Li[1,2], Shanze Dong[1,2], Yunqi Nie[1,2], Lei Yang[1*]
1.Technology and Engineering Center for Space Utilization, Chinese Academy of Sciences, China;2.University of Chinese Academy of Sciences, China
We propose a digital soft-gated SPAD array receiver for deep-space optical uplinks. The 10 Mbps 16-PPM demonstration system reaches 0.711signal photocounts per information bit, delivering a 0.6 dB sensitivity gain versus the non-gated receiver.

17:00-17:15 · ACP2026-0629-25 Top-Score Paper
A Simplified Optical Wireless Communication System with Integrated Alignment and Ranging Using Retroreflected Beams
Tianjin Mei[1], Wenjing Xuan[1], Yifei Zhu[1], Hanchang Xiao[1], Qirui Xu[1], Chen Liu[1*]
1.Huazhong University of Science and Technology, China
We demonstrate a simplified OWC system employing one photodetector per terminal and retroreflected beams for simultaneous alignment and ranging, achieving 10 Gbps bidirectional transmission and an average ranging error of 4.13 cm over 3--8 m.

17:15-17:30 · ACP2026-0715-168 Top-Score Paper
Highly Robust Time-Trajectory-Coded 4D-BPSK Format for Long-Range Coherent Optical Inter-Satellite Links
Fang Dong[1], Yi Wei[2,3], Haoyu Zhang[1], Zhe Feng[1], Haiwen Cai[4], Jianfeng Sun[5], Feng Bao[1], Junwen Zhang[1,6], Nan Chi[1,6*]
1.Fudan University, China;2.Shanghai Key Laboratory of Collaborative Computing in Spacial Heterogeneous Networks (CCSN), China;3.Shanghai Aerospace Electronic Technology Institute, China; 4.Zhang Jiang Laboratory, China;5.Shanghai Satellite Network Research Institute (SSNRI), China;6.Key Laboratory for Information Science of EMW (MoE), China
We report a highly robust time-trajectory-coded 4D-BPSK (TTC-4D-BPSK) modulation format for long-range coherent optical inter-satellite links. By introducing temporal trajectory coding across consecutive 4D-BPSK symbols, the proposed format effectively enlarges the Hamming between distinct four-dimensional symbol trajectories, thereby enabling robust transmission in the low SNR

regime. Compared with conventional PM-4QAM modulation, the proposed TTC-4D-BPSK achieves a 1.9 dB improvement in photons per bit (PPB) at the forward-error-correction (FEC) threshold of 3.8×10^{-3}. We further demonstrate a TTC-4D-BPSK free space optical (FSO) transmission system over an equivalent distance of 2,000 km using dual-aperture reception, achieving a net data rate of 419.1 Gbit/s.

Best Top-Score Paper Award Competition Session

November 1, 2026 · VIP Room 2-2, 2F

NP-Track Presider: **Lan Li,** Westlake University, China

08:30-08:45 · ACP2026-0723-4 Top-Score Paper

Bidirectional High-Capacity Integrated Sensing and Communication Emulation Using Interconnected Counter-Propagating Recirculating Loops

Junyu Wu[1], Zexu Liu[1], Lei Liu[1,2], Honglin Jin[3], William Shieh[1,2*]

1.Westlake University, China;2.Westlake Institute for Optoelectronics, China;3.Peng Cheng Laboratory, China

We demonstrate a bidirectional WDM integrated sensing and communication system using interconnected counter-propagating recirculating loops emulating long-haul fiber links, achieving 6.016-Tbps transmission over 2187.72 km, and DAS sensing with 1.85-km spatial resolution and over 15-dB sensing SNR.

08:45-09:00 · ACP2026-0701-117 Top-Score Paper Industry Innovation Nomination

SIRT-Based Tomographic Reconstruction of Refractive Index Profiles in Specialty Sensing Fibers with Non-Circular Claddings

Chao Wang[1], Li Pei[1*], Jianshuai Wang[1], Zhouyi Hu[1]

1.Beijing Jiaotong University, China

We propose a tomographic method based on a simultaneous iterative reconstruction technique with phase-domain alignment for refractive index profiling of non-circular cladding fibers. By eliminating the circular symmetry assumptions required by conventional methods, it achieves accurate reconstruction of D-shaped fibers under mechanical jitter, with superior accuracy for sensor metrology.

09:00-09:15 · ACP2026-0714-51 Top-Score Paper

Optomechanically enhanced ppb-level NH_3 sensing with a graphene-functionalized on-chip microcavity

Yanhong Guo[1], Yuchen Wang[1], Huize Yang[1], Guangming Zhao[2], Baicheng Yao[1], Teng Tan[1]

1.University of Electronic Science and Technology of China, China;2.Institute of Semiconductors, Chinese Academy of Sciences, China

We demonstrate a graphene-functionalized toroidal optomechanical sensor that preserves high optical Q and converts NH_3adsorption into narrow-linewidth phonon-lasing frequency shifts, enabling ppb-level detection with -36.2 Hz decade^{-1}sensitivity and a fast response time.

09:15-09:30 · ACP2026-0715-64 Top-Score Paper

High-Resolution Multi-Target Ranging via Coherent Chirped Pulse Interferometry

Yitian Gong[1], Yunjie Zeng[1], Chi Zhang[1*]

1.Huazhong University of Science and Technology, China

Chirped pulse interferometry (CPI) measures absolute distance by stretching femtosecond pulses through asymmetric dispersion,-magnifying picosecond-scale delays into nanosecond-scale signals. All prior CPI implementations, how- ever, detect only the optical intensity, discarding the phase of the optical field. When two targets lie closer than the temporal span of a single chirped fringe, their zero-frequency oscillation points coalesce and become indistinguishable. Here we show that coherent detection recovers the full complex amplitude of the optical field, enabling simultaneous high-resolution multi-target ranging at the full repetition rate of the frequency comb. Digital dechirping followed by a Fourier transform converts the time- domain fringe pattern into a frequency spectrum where each target appears as an independent spectral peak. Using a self- referencing architecture in which the chirped pulse itself serves as the local oscillator, we experimentally resolve two targets that direct detection cannot separate. The coherent system achieves an overlapping Allan deviation of 138 nm at τ = 1.26 ms.

09:30-09:45 · ACP2026-0701-41 Top-Score Paper

Programmable Photonic Processor for Ultra-Low-Error Multi-Frequency Microwave Photonic Measurement

Ziyao Zhang[1], Yuxin Liang[2], Shijia Fan[2], Hanmeng Li[2], Naidi Cui[2*], Junbo Feng[2*], **Guanyu Chen**[1*]

1.Chongqing University, China;2.Chongqing United Microelectronics Center (CUMEC), China

We demonstrate a programmable photonic processor for ultra-low-error microwave frequency measurement, combining MZI coarse localization and microring fine detection. It achieves 9 MHz RMSE over 0–20 GHz and supports simultaneous multi-frequency measurement.

09:45-10:00 · ACP2026-0630-29 Top-Score Paper

Ultra-Low-Loss Silicon Nitride Tunable Photonic Delay Line with Nanosecond-Scale Delay

Yuyan Yao[1], Zexv Wang[1], Ruitao Ma[1], Zejie Yu[1], Yiwei Xie[1*], Daoxin Dai[1]

1.State Key Laboratory for Modern Optical Instrumentation, College of Optical Science and Engineering, Zhejiang University, China

We demonstrate a 4-channel 7-bit true-time delay line on silicon nitride platform, achieving 10.006 ns delay, 78.42 ps resolution, and fiber-to-fiber insertion loss 12.26 dB, enabled by low-loss broadened spiral waveguides and Mach–Zehnder switches (MZSs).

10:00-10:30 Coffee Break

10:30-10:45 · ACP2026-0624-7 Top-Score Paper **Industry Innovation Nomination**

Fully On-Chip Ultra-Wideband Simultaneous Measurement of Doppler-Frequency-Shift and Angle-of-Arrival System

Xinyu Wang[1], Yuchen Shi[1], Zichen Guo[1], Shilan Zhou[1], Shuyue Zhang[1], Jianyi Yang[1], Qikai Huang[2], Qiang Zhang[2*], Hui Yu[2*]

1.Zhejiang University, China;2.Zhejiang Lab, China

We demonstrate a fully on-chip ultra-wideband microwave photonic system for the simultaneous measurement of DFS and AOA, achieving precise measurements with DFS errors within ± 0.03 Hz and AOA errors within ± 2° for a range of -90°- 90° in 2-40 GHz frequency band.

10:45-11:00 · ACP2026-0721-3 Top-Score Paper

Entanglement between Integrated Quantum Memories in the Telecom Band

Yaoqing Zhang[1], Haoze Zhang[1], Yunru Fan[1], Liang Zhai[1], Hao Li[2], Lixing You[2], Guangcan Guo[1], Qiang Zhou[1*]

1.University of Electronic Science and Technology of China, China;2.Shanghai Institute of Microsystem and Information Technology Chinese Academy of Sciences, China

We experimentally demonstrate entanglement between two integrated telecom-band quantum memories. This demonstration is compatible with existing fiber communication infrastructure, which is essential for future quantum networks.

11:00-11:15 · ACP2026-0714-20 Top-Score Paper

Coherent spin-photon interface of single PL6 color center in silicon carbide

Zhen-Xuan He[1], Gergo Thiering[2], Adam Gali[2], Jin-Shi Xu[1], Chuan-Feng Li[1], Guang-Can Guo[1]

1.University of Science and Technology of China, China

In this talk, I will presentour investigation of the oxygen-vacancy PL6 color center in 4H-silicon carbide as a coherent spin–photon interface. Although PL6 has recently emerged as a promising platform for quantum information processing, its spin–photon properties have remained largely unexplored. I will first show how we combine group-theoretical modeling with strain-dependent photoluminescence excitation spectroscopy to fully resolve the excited-state fine structure. Using resonant excitation, we achieve a spin initialization fidelity of 99.69 ± 0.03% and a readout contrast of 98.31± 1.03%. The spin–photon entangled A2 transition exhibits narrow optical linewidths of about 180 MHz and a polarization visibility of ~82%. I will then discuss coherent optical driving, where we obtain Rabi frequencies up to 2.895 GHz—approximately 130 times the optical saturation power. Finally, by applying dynamical decoupling, we extend the spin coherence time from 0.5 ms to 5.70 ms, a ten-fold enhancement. Our results establish the PL6 center as a competitive solid-state spin–photon interface hosted in a commercially available semiconductor platform, combining near-unity initialization, high-speed coherent control, and millisecond-scale coherence without isotopic purification.

11:15-11:30 · ACP2026-0715-57 Top-Score Paper

LED-Pumped Silicon-Based Nanocavity Light Source with Enhanced Spectral Purity

Jingyu Chang[1], Renjie Tang[2], Zezhao Jv[3], Yalan Si[3], Jinghan Yang[4], Yingchun Wu[1], Yuting Ye[2], Zequn Chen[2], Hongtao Lin[3], Lan Li[2*]

1.Zhejiang Key Laboratory of 3D Micro/Nano Fabrication and Characterization, School of Engineering, Materials Science and Engineering, Westlake University, China;2.Zhejiang Key Laboratory of 3D Micro/Nano Fabrication and Characterization, School of Engineering, Department of Electronic Information Engineering, Westlake University, China;3.State Key Laboratory of Brain-Machine Intelligence, College of Information Science and Electronic Engineering, Zhejiang University, China;4.Zhejiang Key Laboratory of 3D Micro/Nano Fabrication and Characterization, School of Science, Department of Physics, Westlake University, China

We demonstrate the first LED-pumped SWIR source using PbS CQDs in a silicon BIC cavity, enabling compact portable devices.

N-Track Presider: Qi Yang, Huazhong University of Science and Technology, China

13:30-13:45 · ACP2026-0626-10 Top-Score Paper
Inverse-Designed Meta Processing Units for Task-aware Photonic Computing Systems
Chu Wu[1], Zeyu Cai[1], Songtao Yang[1], Ruoyu Shen[1], Yinan Zhao[1], Haiou Zhang[1], Wei Chu[1], Xing Lin[1*]
1.Tsinghua University, China
Photonic matrix processors require compact, composable operators for task-aware computing. Here, we demonstrate inverse-designed meta processing units (MPUs) with coherent matrix cascading, hardware-in-the-loop dual-task learning, and neuron-level sharing, reducing programmable-mesh burden while preserving task-specific adaptation.

13:45-14:00 · ACP2026-0630-94 Top-Score Paper
A Vision-Language Model for Optical Equipment Understanding and Fiber Connection Generation
Rui Zhao[1], Shengnan Li[1], Fubin Wang[1], Xiaotian Jiang[2], Ydi Wang[1], Min Zhang[1], Danshi Wang[1*]
1.Beijing University of Posts and Telecommunications, China;2.China Telecom Research Institute, China
A vision-language model (VLM) framework for optical networks is proposed. Fine-tuning Qwen3-VL-8B withLoRA enables accurate panel recognition, layout validation, and automated fiber connection generation, significantly reducing manual effort and errors in on-site O&M.

14:00-14:15 · ACP2026-0716-8 Top-Score Paper
Storage-aided Hierarchical Aggregation and Orchestration for the Optical Internet of Agents
Xiao Lin[1*], Wang Li[1], Ziang Feng[1], Zuqi Teng[1], Haoyuan Zheng[1], Enguo Chen[1*]
1.Fuzhou University, China
We propose SHAO-MoA,a storage-aided hierarchical orchestration framework for the Optical Internet of Agents.A spatio-temporal capacity graph and two-stage residual-flow scheduling improve state aggregation,resource utilization,and collaborative inference under constrained optical resources.

14:15-14:30 · ACP2026-0715-190 Top-Score Paper Industry Innovation Nomination
14.6-Tb/s GMI with 400G-per-channel Direct-Detection Optical Interconnects over 25-km AR-HCF
Yixiao Zhu[1*], Yutong Pan[2], Xiang Cai[2], Tianhong Zhang[2], Tianchi Zhong[2], Shikui Shen[3*], Yu Qin[4,5], Yichun Shen[5], Limin Xiao[4], Shuailuo Huang[3], Zelin Wang[3], Weisheng Hu[1], Fan Zhang[2*]
1.Shanghai Jiao Tong University, China;2.Peking University, China;3.China Unicom Research Institute, China;4.Fudan University, China;5.Zhongtian Technology Advanced Materials Co., Ltd, China
We leverage the ultralow nonlinearity of anti-resonant hollow-core fiber to unlock launch power bottleneck for XPM-free massively-parallel DWDM transmission, enabling 400G-per-channel Kramers-Kronig direct detection with 17.4-Tb/s line rate and 14.6-Tb/s GMI-estimated capacity over 25 km.

14:30-14:45 · ACP2026-0713-1 Top-Score Paper
RingStitch: Demand-Aware Optical Stitching for Fragmented TPU Clusters
Huiru Ao[1], Fan Yang[1], Binglei Wang[1], Bo Liu[1], Jialong Li[1*]
1.Shenzhen University of Advanced Technoloy, China
RingStitch is an OCS-based scheduler that combines fragmented TPU rack capacity into logical rings. By prioritizing local placement, fragment-aware selection, and topology-aware ordering, it improves utilization, reduces blocking and waiting time, and limits communication overhead.

14:45-15:00 · ACP2026-0701-84 Top-Score Paper
Hybrid ML-based Rapid Calibration Method for Wavelength Selective Switches
Zihe Zhang[1], Yuzhe Li[1], Xiao Zhang[1], Chen Liu[1], Liangjia Zong[1*]
1.Huazhong University of Science and Technology, China
We propose a hybrid machine-learning-based rapid calibration method and first demonstrate its validation on a commercial-grade 32-port WSS module. Experimental results show over 97% calibration workload reduction while maintaining high port isolation.

15:00-15:15 · ACP2026-0714-26 Top-Score Paper Industry Innovation Nomination
MoSE: Mode-Switching Expander for Mixed LLM Training and Inference
Fan Yang[1], Ying Zhou[2], Binglei Wang[1], Zhenjie Zhou[1], Jialong Li[1*]
1.Shenzhen University of Advanced Technoloy, China;2.Beijing Jiaotong University, China
We propose MoSE, a mode-switching optical expander that reallocates a fixed-degree edge budget between P-D-biased and uniform topologies, reducing communication cost for mixed LLM inference and training without additional ports or routing-policy changes.

15:15-15:30 · ACP2026-0728-5 Top-Score Paper
A 35-dB-Power-Budget 228-Gb/s EDFA-Free Self-Coherent PON Enabled by Coordinated Two-Stage SOA Control
Yuhao Fang[1], Weiqi Lu[1], Haojie Zhu[1], Yuan Puzhen[1], Dayu Shi[1], William Shieh[1*]
1.Westlake University, China
We demonstrate an EDFA-free 228-Gb/s burst-mode self-coherent PON over 40.72-km SSMF, using uncooled TO-CAN DFB laser and CSPR-optimized coordinated ONU/OLT SOA control we achieve a 35-dB power budget over 30dB ODN range.

Best Student Paper Award Competition Session

November 1, 2026 · VIP Room 1-2, 1F

Presider: **Lena Wosinska,** Chalmers University of Technology, Sweden

13:30-13:45 · ACP2026-0701-146

High-Fidelity Integer Factorization by QUBO Optimization on a Photonic Ising Chip

Kun Liu[1], Xin Ye[1], Luyu Si[1], Wenjia Zhang[1*], Zuyuan He[1]

1.Shanghai Jiao Tong University, China

We demonstrate a hardware-assisted 32-bit integer factorization workflow that optimizes a QUBO-derived factorization energy model with a packaged photonic Ising chip. The Ising machine enabled by a multichannel cascaded Mach-Zehnder modulators provides the 7-bit calibrated optical readouts used to evaluate energy differences in order for performing spin flipping, Metropolis updating, and candidate factors verification. On a retained optimized five-instance set of 32-bit QUBO-derived block factorization models, the best optical-path annealing runs increase the aggregate factorization success count from 5/250 for direct bit flips and 22/250 for circuit annealing simulation to 91/250. These results demonstrate that a calibrated photonic chip can serve as a practical and scalable accelerator for hardware-assisted QUBO factorization, paving the way toward photonic-enabled large-scale integer factorization.

13:45-14:00 · ACP2026-0715-178

A 1.2 dB Insertion Loss on-Chip Mach-Zehnder Interferometer Type Optical Isolator Based on Stoichiometric Ce:YIG Magneto-Optical Thin Films

Di Wu[1], Zhenyuan Ren[1], Tianchi Zhang[1], Zixuan Wei[1], Jun Qin[1], Lei Bi[1*]

1.University of Electronic Science and Technology of China, China

We demonstrate a heterogeneously integrated Mach-Zehnder interferometer optical isolator on a silicon nitride platform. By eliminating intragranular defects in Ce:YIG films, the device achieves a record-low insertion-loss of 1.2 dB and 27.6 dB isolation ratio.

14:00-14:15 · ACP2026-0701-205

Robust and Low-Complexity Duobinary-Encoded Out-of-Band Channel with Adaptive Equalization for Shared 200G Coherent Transceiver

Yongzhu Hu[1], Junhao Zhao[1], An Yan[1], Shouyun Cai[1], Penghao Luo[1], Xuyu Deng[1], Renle Zheng[1], Shuhong He[1], Aolong Sun[1], Zhenping Xing[2], Yanzhao Lu[2], Hongchen Yu[2], Zhicheng Ye[2], Nan Chi[1], Junwen Zhang[1*]

1.Fudan University, China; 2.Huawei Technologies, China

We demonstrate a Duobinary-encoded out-of-band channel sharing a 200-Gbps coherent PON transceiver over 20-km SSMF, recovered by low-complexity absolute-value operation tolerant to frequency offset, phase noise, and polarization rotation, reaching 1E-6 threshold at −40.5 dBm.

14:15-14:30· ACP2026-0723-4

Bidirectional High-Capacity Integrated Sensing and Communication Emulation Using Interconnected Counter-Propagating Recirculating Loops

Junyu Wu[1], Zexu Liu[1], Lei Liu[1,2], Honglin Jin[3], William Shieh[1,2*]

1.Westlake University, China;2.Westlake Institute for Optoelectronics, China;3.Peng Cheng Laboratory, China

We demonstrate a bidirectional WDM integrated sensing and communication system using interconnected counter-propagating recirculating loops emulating long-haul fiber links, achieving 6.016-Tbps transmission over 2187.72 km, and DAS sensing with 1.85-km spatial resolution and over 15-dB sensing SNR.

14:30-14:45 · ACP2026-0715-123

Thin-Film Lithium Niobate Reconstructive Spectrometer Based on Long-Period-Grating-Enabled Multimode Interference

Jincheng Yin[1], Yunlu Bai[1], Wenyue Qiu[1], Tian Gao[1], Youkang Gao[1], Yiyang Zhang[1], Kaixuan Chen[1*], Liu Liu[2*]

1.South China Normal University, China; 2.Zhejiang University, China

We demonstrate an electro-optic thin-film lithium niobate reconstructive spectrometer using cascaded long-period gratings and multimode phase shifters for low-correlation spectral encoding, achieving 165-nm bandwidth, 0.08-nm resolution, a 100-kHz scanning speed, and 0.12-mW average power consumption.

14:45-15:00 · ACP2026-0715-47

Pulse-Synchronous Time-Domain Segmented Entropy Loading for Co-Wavelength Integrated sensing and communication Systems

Bingbing Zhang[1], Meng Xiang[1*], Jiacai Liu[1], Weitao Zheng[1], Songnian Fu[1], Yuwen Qin[1]

1.Key Laboratory of Photonic Technology for Integrated Sensing and Communication, Ministry of Education of China and School of Information Engineering Guangdong University of Technology, China

We propose a pulse-synchronous time-domain segmented entropy loading scheme for co-wavelength optical ISAC, achieving a 0.2-bit/symbol GMI improvement and 3-dB required OSNR reduction while preserving 1-kHz DAS over 10.91-km SSMF.

15:00-15:15 · ACP2026-0713-4

Low Memory Target-Response MLSE Receiver for Absorption-Notch-Resilient Hollow-Core Fiber Coherent Links

Tianhong Zhang[1], Yutong Pan[1], Yixiao Zhu[2*], Shikui Shen[3*], Yu Qin[4, 5], Tianchi Zhong[1], Limin Xiao[4], Yichun Shen[5], Zelin Wang[3], Shuailuo Huang[3], Xian Zhou[6], Fan Zhang[1, 7*]

1.Peking University, China; 2.Shanghai Jiao Tong University, China; 3.China Unicom Research Institute, China; 4.Fudan University, China; 5.Zhongtian Technology Advanced Materials Co., Ltd., China; 6.University of Science and Technology Beijing, China; 7.Peng Cheng Laboratory, China

An absorption-aware TR-MLSE receiver is demonstrated for 64-GBaud 16QAM transmission over 25-km hollow-core fiber, using notch-matched target-response equalization to mitigate gas-line absorption, improve BER performance, and substantially reduce adaptive-equalization complexity without transmitter-side spectral shaping.

15:15-15:30 · ACP2026-0626-10

Inverse-Designed Meta Processing Units for Task-aware Photonic Computing Systems

Chu Wu[1], Zeyu Cai[1], Songtao Yang[1], Ruoyu Shen[1], Yinan Zhao[1], Haiou Zhang[1], Wei Chu[1], Xing Lin[1*]

1.Tsinghua University, China

Photonic matrix processors require compact, composable operators for task-aware computing. Here, we demonstrate inverse-designed meta processing units (MPUs) with coherent matrix cascading, hardware-in-the-loop dual-task learning, and neuron-level sharing, reducing programmable-mesh burden while preserving task-specific adaptation.

Post-deadline Paper Session

Conference Room 102B, 1F

13:30-15:30 · November 4, 2026 · Wednesday
Presiders: Liu Liu, Zhejiang University, China & Lan Li, Westlake University, China

13:30-13:45 · ACP2026-1012-2

Single-Lane 200-GBaud (400-Gb/s) PAM-4 Transmitter Using 28-nm CMOS and Pure Silicon MZM with Bias-Tuned Bandwidth Matching and Swing-Compensated Linearity

Ke Li[1*], **Junbo Zhu**[1], Bowen Zhang[1], Mengqi Wu[1], Chen Zhen[1], Zhang Chen[1], Peng Li[1], Daoqun Liu[1], Xu Zhang[1], Qibing Wang[1], Yu Zheng[1], Xiaoqi Peng[1], Jiayao Li[1], Shenghao Liu[2], Wei Cao[2], Weiwei Zhang[3], Chao Li[1], Lei Wang[1], Zhixue He[1], Shaohua Yu[1], Graham Reed[3]

1.PengCheng Laboratory, China;2.Crealights Technology Co. Ltd, China;3.University of Southampton, United Kingdom

Reducing DSP overhead with physical-domain electro-optic dynamics, we reconfigure segmented silicon modulators into voltage-tunable analog networks. Driven by 28-nm CMOS, the transmitter demonstrates bias-matched, swing-compensated 200-GBaud (400-Gb/s) PAM-4 with 1.30-pJ/bit efficiency, 8e-4 B2B BER, and sub-FEC 1-km transmission

13:45-14:00 · ACP2026-1015-22

Signal Denoising via Talbot-Based Coherent Optical Sampling Using a Monolithically Integrated Thin-Film Lithium Niobate Photonic Circuit

Zaifan Wu[1], Jiaye Wu[2,3], Xiang Cai[1], Xian Zhou[4], Camille-Sophie Brès[3], Fan Zhang[1,5*]

1.State Key Laboratory of Photonics and Communications, School of Electronics, Peking University, China;2.City University of Hong Kong (Dongguan), China;3.Photonic Systems Laboratory, École Polytechnique Fédérale de Lausanne, Switzerland;4.School of Computer & Communication Engineering, University of Science and Technology Beijing, China;5.Pengcheng Laboratory, China

We demonstrate a monolithically integrated thin-film lithium niobate circuit combining phase modulation and four delay lines for 10 GHz Talbot coherent sampling, reducing 2.5 GBaud PAM2 bit error rates by over three orders of magnitude.

14:00-14:15 · ACP2026-1015-5

77.6-Tb/s Unrepeatered Field Transmission over Gas-Purged HCF: 142-km Bidirectional and 249-km Unidirectional Operation using Commercial C+L-Band Transponders

Sai Chen[1], Yan He[1,2], Hu Lingling[3], Li Xiao[4], Dechao Zhang[3], Jiekui Yu[4], Dong Yang[1], Alan Pak Tao Lau[2], Liang Dou[5], Yuanchao Su[1]

1.Alibaba Cloud Computing, Alibaba Group, Hangzhou, China;2.Photonics Research Institute, The Hong Kong Polytechnic University, Hong Kong, China;3.Department of Fundamental Network Technology, China Mobile Research Institute, Beijing, China;4.Accelink Technologies Co. Ltd, Wuhan, China;5.Alibaba Cloud Computing, Alibaba Group, Beijing, China

We report the first fully loaded 77.6-Tb/s C+L-band unrepeatered transmissions at a net 8 bit/s/Hz using commercial equipment over gas-purged hollow-core fibre deployed in aerial, buried, and ducted sections: 142-km same-wavelength bidirec- tional and 249-km unidirectional paths. Distributed temperature sensing supports 48-hr assessment of transmission stability.

14:15-14:30 · ACP2026-1015-23

A Weakly Coupled 4-Core Fiber Transmission over 13,696 km with Integrated Amplification for a 701-Pb/s·km Capacity-Distance Product

Yu Wang[1], Yanze Wang[1], Bowen Zhang[1], Shurong Zhai[1], Shigui Zhang[2], Liping Ma[2], Yanpu Wang[2], Yan Wang[2], Jianping Li[2], Jiang Lin[2], Nan Sun[3], Jinhao Liu[3], Min Yan[3], Guohua Zhai[3], Chenhuan Hua[3], Gan Luo[3], Zhihui Dong[3], Zhiqun Yang[1], Yaping Liu[1*], Zhanhua Huang[1], Lin Zhang[1*]

1.Tianjin university, China;2.HMN Technologies Co., Ltd., China;3.Jiangsu Alpha Optic-Electric Technology Co., Ltd., China

Weakly coupled multi-core fibers (WC-MCFs), together with integrated multi-core amplifiers, provide a promising solution for increasing the capacity of long-haul submarine cable systems. Using a newly developed low-loss WC-4CF and high-performance integrated 4-core erbium-doped fiber amplifiers (4C-EDFAs), we experimentally demonstrate a 51.2-Tb/s transmission over 13,696 km, associated with a generalized mutual information (GMI) related capacity of 62.24 Tb/s. The world-record capacity-distance product of 701.24 Pb/s·km （corresponding to a GMI-related capacity-distance product of 852.44 Pb/s·km) is achieved for C-band submarine transmission over WC-MCFs. This result is enabled by a WC-4CF exhibiting a low loss of 0.153 dB/km, a large effective mode area of 115 μm², and a low inter-core crosstalk of −54.6 dB/100km, as well as a highly integrated 4C-EDFA with a low noise figure of 4.40 dB. This work presents a realistic solution ready for real-time submarine transmission in the future.

14:30-14:45 · ACP2026-1015-2

Low-Complexity 4 × 4 MIMO Equalization for GMI-Estimated 51.68 Pb/s Capacity in a 10-km 38-Core Ring-Core Fiber

Suqing Li[1], Jie Liu[1*], Junyi Liu[1], Hualin Li[1], Haolin Zhou[1], Lei Shen[2], Shuo Xu[2], Jie Luo[2], Shuqi Mo[1], Yuming Huang[1], Yining Huang[1], Siyuan Yu[1*], Zhaohui Li[1*], Lei Zhang[2]

1.School of Electrical and Information Technology, Sun Yat-sen University, China;2.Yangtze Optical Fibre and Cable Joint Stock Limited Company, State Key Laboratory of Optical Fibre and Cable Manufacture Technology, China

We demonstrate a record bidirectional GMI-estimated capacity of 51.68 Pb/s (25.84 Pb/s × 2) over a 10-km 38-core ring-core fiber using SDM-WDM transmission with low-complexity 4 × 4 MIMO equalization.

14:45-15:00 · ACP2026-1015-29

22.95-Tb/s RGB-Equivalent Multi-Task Semantic Communication over a 342.8-km Unrepeatered HCF-SSMF Link Using Continuous JSCC

Xiang Cai[1], Zhiming Sun[1], Shuailuo Huang[2], Yixiao Zhu[3*], Chenbo Zhang[1], Yu Qin[4,5], Zaifan Wu[1], Wenhao Wang[6], Zelin Wang[2], Ning Zhang[6], Limin Xiao[4], Xian Zhou[7], Shikui Shen[2*], Fan Zhang[1*]

1.Peking University, China;2.China Unicom Research Institute, China;3.Shanghai Jiao Tong University, China;4.Fudan University, China;5.Zhongtian Technology Advanced Materials Co., Ltd., China;6.SiFotonics Technologies Co. Ltd., China;7.University of Science and Technology Beijing, China

We experimentally demonstrate distortion-tolerant continuous JSCC semantic communication over 342.8-km unrepeatered HCF-SSMF link with EDFA-only amplification, achieving 23.22-dB mean PSNR and 22.95-Tb/s quality-qualified RGB-equivalent throughput while supporting segmentation, depth estimation and detection from shared reconstructions.

15:00-15:15 · ACP2026-1015-20

Single-PD SSB Direct Detection PON Enabling 365 Gb/s over 1020-ps/nm SSMF and 435 Gb/s over HCF

Yixiao Zhu[1*], Yu Qin[2,3], Xiang Cai[4], Yutong Pan[4], Tianhong Zhang[4], Lingjun Zhou[1], Luyao Huang[5], Shuailuo Huang[6], Shikui Shen[6*], Yichun Shen[3], Zelin Wang[6], Limin Xiao[2], Dezhi Zhang[5], Ming Jiang[5], Weisheng Hu[1], Fan Zhang[4*]

1.Shanghai Jiao Tong University, China;2.Fudan University, China;3.Zhongtian Technology Advanced Materials Co., Ltd, China;4.Peking University, China;5.China Telecom Research Institute, China;6.China Unicom Research Institute, China

We demonstrate single-sideband direct-detection PON using single photodiode, exhibiting 1000-ps/nm dispersion tolerance with simplified ONUs. We achieve 365-Gb/s peak rate with 29-dB budget over 60-km SSMF, and 435/225-Gb/s rate with 32/47-dB budget over 25-km AR-HCF.

15:15-15:30 · ACP2026-1015-9

Quantum Teleportation over Hollow-Core Fiber in Field

Riyao Song[1], Yazhou Zhao[1], Yunru Fan[1], Yangbin Ma[1], Sishen[2], Haizhi Song[2], Hao Li[3], Lixing You[3], Shirong Bu[1], Liang Zhai[1], Guangcan Guo[1], Qiang Zhou[1*]

1.University of Electronic Science and Technology of China, China;2.Southwest Institute of Technical Physics, China;3.National Key Laboratory of Materials for Integrated Circuits Shanghai Institute of Microsystem and Information Technology Chinese Academy of Sciences, China

We report the first field-deployed implementation of quantum teleportation over hollow-core fiber (HCF), demonstrated on the China Telecom testbed at Xinglong Lake. Rack-mounted quantum nodes built from telecom-compatible components enable high-fidelity teleportation of time-bin qubits over HCF links without active link stabilization. These results demonstrate the feasibility of deploying HCF-based quantum networks in real-world operational environments.

Poster Session-D-Track

Content

D1: Advanced Packaging, Interfacing, and System Integration

ACP2026-0630-102
Launch-Condition-Aware Modal Bandwidth Evaluation of 1310 nm Silicon Photonics Transmission over OM3 Multimode Fibers
Quanzhen Luo[1], Zhipeng Jin[1], Yi Cai[1], Gangxiang Shen[1], Xin Chen[2], Hao Chen[2], MingJun Li[2], Gordon Ning Liu[1*]
1.Soochow University, China; 2.Corning Incorporated, United States
Through multi-wavelength Monte Carlo simulation, we evaluate the 1310 nm modal bandwidth of OM3 multimode fibers under parametric modeling launch conditions. The results offer practical guidance for assessing the feasibility of 1310 nm silicon photonics links over easy coupling OM3 multimode fibers.

ACP2026-0630-78
Optical Forward Error Correction Encoding Using Four-Wave-Mixing-Based Optical Frequency Combs
Yang Xiao[1], Shaoxing Wang[1], Jiangbing Du[1*], Tianyan Guo[2], Zuyuan He[1]
1.Shanghai Jiao Tong University, China; 2.Peking University, China
We propose a scalable optical forward error correction encoding scheme using four-wave-mixing-based optical frequency combs for optical matrix-vector multiplication, experimentally achieving tunable rates of 5, 10, and 20 Gbit/s with a 4-dB net coding gain.

ACP2026-0701-134
High-efficiency Silicon Mach-Zehnder Modulator Enhanced by Micro-Ring and Slow-Light
Yixiao Zhang[1], Jiangbing Du[1*], Zuyuan He[1]
1.Shanghai Jiao Tong University, China
We demonstrate a slow-light-enhanced micro-ring-assisted Mach-Zehnder modulator on a silicon photonics platform. One-dimensional photonic crystal waveguides with a 50% duty cycle are introduced in the Mach-Zehnder arms to enhance the carrier-depletion-induced phase shift. The fabricated device achieves a measured equivalent modulation efficiency of 0.27 V·cm for a 137 μm modulation length. RF simulations of the capacitively loaded traveling-wave electrode indicate a 3-dB bandwidth exceeding 50 GHz with near-50Ω impedance matching.

ACP2026-0701-77
A Broadband and Alignment-Tolerant Suspended Si3N4 Fork Edge Coupler
Zhenyu Ni[1], Fangcheng Cao[1], Xingyan Zhao[1], Yang Qiu[1,2*], Shaonan Zheng[1,2], Yuan Dong[1], Qize Zhong[1], Ting Hu[1,2*]
1.School of Microelectronics, Shanghai University, China; 2.Shanghai Key Laboratory of Intelligent Connected Vehicle Interaction Chip and System, Shanghai University, China
This paper proposes a suspended Si3N4 edge coupler for highly efficient coupling between standard single-mode fibers (SMFs) and on-chip Si3N4 waveguides. The device features a suspended SiO2 spot size converter (SSC) which serves to progressively compress the incident mode field. An embedded dual-arm adiabatic mode converter based on Si3N4 is employed to enlarge the effective receiving aperture and enhance the transition to the single-mode output waveguide. Influences of primary geometric parameters on transmission performance are systematically investigated, in addition to broadband response and alignment tolerance. The optimized structure, at the central wavelength of 1550 nm, achieves a TE_0 coupling efficiency of 80.21%, together with an insertion loss of 0.96 dB and a TE_0 mode purity of 96.32%. Across the entire 1500-1600 nm spectra, the device demonstrates a 1-dB bandwidth and a 1-dB alignment tolerance of at least ±2 μm in both the lateral and vertical directions. These outcomes suggest not only promising broadband characteristics but also robust packaging tolerance, making the proposed coupler suitable for fiber-to-chip coupling.

ACP2026-0701-89
Cross-Shaped Dual-Etched Two-Dimensional Grating Coupler for Polarization-Insensitive Fiber-to-Chip Coupling
Weiwei Liu[1], Lei Wang[1*]
1.Pengcheng Laboratory, China
A CMOS-compatible cross-shaped dual-etched 2D grating coupler is proposed for polarization-insensitive fiber-to-chip coupling, achieving -2.9 dB peak coupling efficiency and below 0.2 dB PDL across the C band.

ACP2026-0711-3
Facet-Attached Microlens via Two-Photon Polymerization for Short Near-Infrared Wavelength Edge Coupling
Caoyi Qian[1], Zhibiao Hao[1*], Lin Gan[1], Jian Wang[1], Bing Xiong[1], Chengzheng Sun[1], Lai Wang[1], Yanjun Han[1], Yi Luo[1]
1.Tsinghua University, China
A facet-attached microlens fabricated via two-photon polymerization enables low-loss edge coupling in the short near-infrared band. The device experimentally achieves 2.2 dBper-facet loss and extends alignment tolerance.

ACP2026-0715-175

Normalization-Separated Modeling of Local AR-Coating Response in a GRIN-Assisted SMF-NANF Interface

Xiaowen Jiang[1], Yang Zhao[2], Tian Guo[2], Tong Zhai[1], Yao Guo[1], Zhiguo Zhang[1*]

1.Beijing University of Posts and Telecommunications, China; 2.State Grid Beijing Electric Power Company, China

We present a normalization-separated SMF-GRIN-NANF model. A matched full-wave control lowers calibrated interface-scattered reflection from 3.49% to 0.093%, while keeping reflection, modal transmission, and mode overlap distinct for a power audit without mixing efficiency metrics.

ACP2026-0715-194

Heterogeneously-integrated III-V-on-SOI photodetector achieved by full-chiplet-level micro-tranfer printing for Boolean function construction

Wenyu Li[1*], Bingyao Cao[1], Wanjiao Zhang[2], Linjie Zhou[3], Jia Zhao[4], Yan Zhu[5], Nan Ye[1*], Yingxiong Song[1], Fufei Pang[1]

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Full-chipletmicro-transferprintingrealizesaIII-V-on-SOIphotodetectorwith0.04A/Wresponsivityand20-GHzbandwidthat1550nm.Itstransmissionresponsegeneratesdevice-specificbinarysequencesforbalancedBooleanfunctionswithhighnonlinearityandalgebraicdegree.

D2: Integrated Photonic Circuits and Heterogeneous Platforms

ACP2026-0520-1

Integrated Photonic Circularly Polarized Pumping for a Miniaturized NMR Co-magnetometer

Xiaoqin Meng[1,2,3,4], Zhen Chai[1,2,3,4*]

1.School of Instrumentation and Optoclectronic Engincering, Beihang University, China; 2.Quantum Science and Technology College, Beihang University, China; 3.Institute of Large-Scale Scientific Facility and Centre for Zero Magnetic Field Science, BeihangUniversity, China; 4.Beihang Hangzhou Innovation Institute, Hangzhou, China

We demonstrate a chip-level optical pumping system integrating the single-mode polarization maintaining fiber with an on-chip silicon nitride radiator for circularly polarized electron and nuclear spin pumping, achieving 2.6 nT/Hz$^{1/2}$ sensitivity in an NMR co-magnetometer.

ACP2026-0622-4

A 1.6 Tb/s Heterogeneously Integrated Optical Transmitter Based on Thin-Film Lithium Niobate and Photonic Wire Bonding

Tongtong Yang[1], Laiwen Yu[2*], Shenghong Xie[1], Yinyin Hu[2], Yuechun Shi[2]

1.National Laboratory of Solid State Microstructures, Nanjing University, China., China; 2.Yongjiang Laboratory, China

We report a heterogeneously integrated optical transmitter capable of 1.6 Tb/s aggregate data rate (8 × 200 Gb/s) for high capacity interconnects. Using photonic wire bonding (PWB) technology, we demonstrate efficient hybrid integration of high power InP distributed feedback (DFB) lasers, thin film lithium niobate (TFLN) modulator arrays, and fiber arrays, thereby mitigating severe mode field mismatches. The custom designed TFLN modulators provide an electro optic bandwidth of over 59 GHz. The PWB based optical bridges yield an average coupling loss of only 2.33 dB. In system experiments with four level pulse amplitude modulation (PAM4) signals, all eight channels exhibit open eye diagrams, and the measured transmitter dispersion eye closure quaternary (TDECQ) is as low as 1.92 dB.

ACP2026-0625-6

Low-Loss Passive Silicon Photonic Devices in the C- and O-Bands on a 300-mm SOI Wafer

Jiawei Weng[1], Ying Sun[1], Jia Guo[1], Huiyun Jiang[1], Jun Zou[1], Hongtao Lin[1*]

1.Zhejiang University, China

We demonstrate low-loss C- and O-band passive silicon photonic devices on a 300-mm silicon-on-insulator (SOI) platform. Wafer-level tests show a C-band strip-waveguide loss of 0.768 dB/cm at 1550 nm and characterize several representative passive components.

ACP2026-0626-16

Heterogeneously Integrated Low-Cost Sol-Gel Barium Titanate Spatial Light Modulators on Silicon with Ultrahigh Thermo-Optic Response

Hongguang Sun[1], Min Wang[2], Yi Chen[1], Ying Qiu[1], Ming Luo[1], Liang Liao[1], Xi Xiao[3*], Qiuyun Fu[4*]

1.China Information and Communications Technology Group, China; 2.State Key Laboratory of Optical Communication Technologies and Networks (OCTN), China Information Communication Technologies Group Corporation (CICT) Wuhan, China, China; 3.National Information Optoelectronics Innovation Center, China; 4.Huazhong University of Science and Technology - Main Campus, China

We demonstrate low-cost sol-gel BTO-on-silicon SLM with record 12.2×10^{-4}K-1 thermo-optic coefficient, 55% modulation depth, 0.14 ms response and halved power for beam steering & 6G optical interconnects.

ACP2026-0626-18

First Demonstration of a Grating-Lobe-Free 3.45-3.85 μm Silicon Optical Phased Array for Two-Dimensional Solid-State Beam Steering

Yuheng Liu[1], Lipeng Xia[1], Yixiang Zhang[1], Hong Zhang[1], Yuhan Sun[1], Yi Zou[1*]

1.ShanghaiTech University, China

We demonstrate the first optical phased array operating in the 3.45-3.85 μm atmospheric transparency window. By employing a broadband, crosstalk-suppressed 32 channel dense waveguide array, a full 180° grating-lobe-free beam steering is achieved.

ACP2026-0626-24

Robust Direct Binary Search for Fabrication-Tolerant Inverse Design of Digital Photonic Devices

Qi Zhou[1,2], Jiahao Li[1,3], Xiang Li[2,4*], Ming Luo[1], Lin Wu[1], Bohao Sun[1], Hanbing Li[1], Ying Qiu[1*]

1.State Key Laboratory of Optical Communication Technologies and Networks (OCTN)； China Information and Communication Technologies Group Corporation (CICT) Wuhan, China, ; 2.School of Mechanical Engineering and Electronic Information； China University of Geosciences (Wuhan) Wuhan, China, ; 3.College of Future Information Technology Fudan University, China; 4.Wuhan National Laboratory for Optoelectronics ； Huazhong University of Science and Technology, China;

A robust direct binary search brings fabrication tolerance into discrete inverse design by optimizing worst-case performance across hole radii; demonstrated on silicon power splitters, it sharply improves etch tolerance for digital photonic devices.

ACP2026-0628-10

Multi-Channel Silicon Photonic Spectrometer Based on a Microring Resonator Array

Haorui Liu[1], Long Zhang[1], Da Lv[1], Zhiwei Bu[1], Gaopeng Wang[1], Tingting Wei[1], Daoxin Dai[1*]

1.Zhejiang University, China

We present a compact multi-channel silicon photonic spectrometer using a microring array with global thermo-optic tuning. It achieves 90 nm bandwidth, 0.5 nm resolution, and accurately reconstructs single-peak, dual-peak, and 64-channel spectra.

ACP2026-0630-82

A PZT-Chalcogenide Micro-ring Integrated Ultrasonic Sensing Patch for Continuous Blood Pressure Monitoring

Zhangyi Sun[1], Ling Luo[1], Huilin Xie[1], Hongzhi Pan[1], Jingshun Pan[2*], Zhaohui Li[1,3*]

1.School of Electronics and Information Technology and Guangdong Provincial Key Laboratory of Optoelectronic Information Processing Chips and Systems, Sun Yat-sen University, China; 2.School of Optoelectronic Science and Engineering SCNU South China Normal University, China; 3.the Southern Marine Science and Engineering Guangdong Laboratory (Zhuhai), China

We present an ultrasonic patch with optoelectronic heterogeneous integration of a piezoelectric transducer and chalcogenide microring resonator for continuous, accurate vascular diameter monitoring and blood pressure derivation, achieving 2 mmHg error vs. commercial sphygmomanometer.

ACP2026-0701-11

Detector-Constrained Path-Encoded Weak-Value Coherent Readout for Integrated Photonic Phase Sensing

Daoming You[1], Hongguang Zhang[1], Xi Xiao[1]

1.National Information Optoelectronics Innovation Center China Information Communication Technologies Group Corporation, China

We present a detector-constrained coherent weak-value readout for integrated photonic phase sensors, showing how near-dark path encoding increases allowable launch power under photodiode limits, yielding bounded SNR gains without contradicting fixed-input known fundamental estimation limits.

ACP2026-0701-154

Broadband tunable hybrid integrated 2 μm III-V-Si3N4laserbased on an InP gain chip

Shu Lin[1], Zehang Xu[1], Qing Gao[1], Jincheng Wei[1], Ruijun Wang[1*], Siyuan Yu[1]

1.Sun Yat-sen University, China

We demonstrate a broadband tunable hybrid integrated 2-μm laser by coupling an InP-based gain chip with a silicon nitride chip. The laser achieves a 63 nm tuning range and a 49 dB side-mode suppression ratio.

ACP2026-0701-166

Metasurface-Integrated Optical Hybrid for Miniaturized Coherent Optical Receivers

Mengjing Xu[1], Bing Xiong[1*], Changzheng Sun[1], Jian Wang[1], Zhibiao Hao[1], Lai Wang[1], Yanjun Han[1], Hongtao Li[1], Li Gan[1], Jiyuan Zheng[1], Zhiquan Yuan[1], Yi Luo[1]

1.Tsinghua university, China

We demonstrate a 1550-nm metasurface-enabled coherent optical receiver with an ultrafast membrane InGaAs photodetector array, achieving integrated I/Q detection, polarization extinction ratios above 15 dB, and a 64 dB common-mode rejection ratio.

ACP2026-0701-178

Inverse Design of Silicon Nitride Photonic Devices via Diffusion Models

Qian Chen[1], Toby Bi[2], Shuangyou Zhang[3], He Gao[1], Zhiyu Mai[1], Chengxi Cai[1], Pascal Del'Haye[2], Yaojing Zhang[1*]

1.The Chinese University of Hong Kong (Shenzhen), China; 2.Max Planck Institute for the Science of Light, Germany; 3.Technical University of Denmark, Denmark

We propose a deep generative framework based on diffusion models for Si_3N_4 photonic devices, eliminating iterative simulations and simultaneously generating both power splitters and WDM demultiplexers on demand with compact footprints and good performance.

ACP2026-0701-182

Multifunctional Polarization Management Device Based on Low-Loss Phase-Change Material Sb2Se3

Lun Zhang[1], Yin Xu[1*], Zhikun Hu[1], Jiale Chen[1], Hualong Bao[1*]

1.Soochow University, China

We have proposed a reconfigurable and multifunctional polarization management device based on the low-loss phase-change material Sb2Se3. By switching the phase state of Sb2Se3, we can achieve three functions on a single device.

ACP2026-0701-215

High-Sensitivity Silicon Photonic Temperature Sensor Based on a Dual-Layer Si/SiN Cascaded Asymmetric Mach–Zehnder Interferometer

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1.Minzu University of China, China; 2.Institute of Semiconductors, Chinese Academy of Sciences, China;

Silicon photonic temperature sensors have attracted considerable attention owing to their compact footprint, and high integration capability. In this work, a Si/SiN cascaded asymmetric Mach–Zehnder interferometer (CMZI) is proposed. By exploiting the large difference in thermo-optic coefficients between silicon and silicon nitride, the cascaded structure generates a pronounced optical Vernier effect, resulting in significantly enhanced temperature sensitivity. Simulation results demonstrate that the proposed sensor achieves a temperature sensitivity of 2.9387 nm/K, representing a significant improvement over a conventional single-stage silicon Mach–Zehnder interferometer. The proposed Si/SiN cascaded Vernier architecture provides a promising approach for the development of high-sensitivity integrated photonic temperature sensors.

ACP2026-0701-245

MPW-compatible low-loss silicon nitride photonics technology with thermo-optic tuning

Aleksandr Baburin[1,2], Kirill Buzaverov[1,2], Evgeny Sergeev[2], Dmitriy Serkin[2], Sergey Avdeev[2], Evgeniy Lotkov[2], Sergey Bukatin[2], Ilya Stepanov[2], Aleksey Kramarenko[2], Ali Amiraslanov[2], Ilya Ryzhikov[2], Ilya Rodionov[1,2]

1.VNIIA, Russia; 2.BMSTU, Russia

We present a low-loss thermo-optic silicon nitride photonic integrated circuits fabrication technology. For our platform we measured microring resonators with linewidth of $k0/2\pi$ = 20.44 MHz corresponding to intrinsic quality factors up to 9.6×10^6 and propagation loss of 0.033 dB/cm. The presented technology provides phase shifter with isolation trenches for the C-band manufacturing. Deep isolation trenches in the SiO_2 cladding lower the π-shift power consumption from 195 mW to 65 mW while preserving a 12 kHz modulation bandwidth.

ACP2026-0701-30

High-Speed Waveguide Ge/Si Avalanche Photodetector with Loop-Enhanced Absorption and Inductive Peaking

Zhen Zhen[1], Xiaobin Liu[1], Chengyang Wu[1], Lei Wang[1]

1.Pengcheng Laboratory, China

We report a waveguide-coupled germanium/silicon avalanche photodiode combining loop-reflector-enhanced optical absorption with an on-chip inductive-peaking electrode. The device exhibits an extracted unity-gain responsivity of approximately 0.78 A/W at 1 V. Avalanche operation produces a peak extracted gain of 61.8 at low optical power, while under an input optical power of -9.64 dBm, the responsivity reaches 2.38 A/W with a multiplication factor of 3.13. The high-bias electro-optic -3 dB bandwidth remains within the 50–56 GHz range. Successful transmissions of 128 Gb/s OOK and 208 Gb/s PAM4 signals with clear, open eye diagrams verify its capability for high-speed optical reception.

ACP2026-0701-40

Low-Power Octave-Spanning Supercontinuum Generation in TeO_2-Clad Silicon Nitride Waveguides with Alternating Dispersion

Wenjie Zheng[1], Feng Ye[1], Hongyan Fu[2], Qian Li[1*]

1.Peking University, China; 2.Tsinghua Shenzhen International Graduate School, China

We achieve octave-spanning supercontinuum at a low peak power of 300 W (61.7 pJ) in a 9.2-mm-long Si_3N_4 waveguide with TeO_2-cladded dispersion engineering.

ACP2026-0701-50

Reconfigurable TE-Pass Polarizer Based on Etchless Sb2Se3-Silicon Nitride Waveguide

Zhikun Hu[1], Yin Xu[1*], Jiale Chen[1], Lun Zhang[1], Hualong Bao[1*]

1.Soochow University, China

We propose a reconfigurable TE-pass polarizer based on an etchlessSb2Se3-silicon waveguideplatform. The device achieves a high-contrast polarization control and dynamically tunable working band. Such device is fabricated without any etching process.

ACP2026-0701-56

High-Extinction-Ratio Silicon-Based Sb_2Se_3 Microring Resonator Across the Full Crystallization Range

Yiting Luo[1], Yuru Li[2], Wanting Ou[1], Zhaohui Li[3,4,5*]

1.Sun Yat-sen University, China; 2.South China Normal University, China; 3.School of Electronics and Information Technology, China; 4.Guangdong Provincial Key Laboratory of Optoelectronic Information Processing Chips and Systems, China; 5.Southern Marine Science, China

We present a silicon microring resonator using low-loss Sb2Se3phase-change material. Modeled via Lorentz-Lorenz theory, the device achieves continuous wavelength tuning while maintaining a high extinction ratio exceeding 20 dB across all crystallization states.

ACP2026-0701-60

Silicon-Waveguide-Assisted Tri-Layer Edge Coupler for SiN-BTO Heterogeneous Photonic Platforms

Meican He[1], Jifang Qiu[1*], Yaqi Feng[1], Yingfei Wan[1], Jian Wu[1]

1.Beijing University of Posts and Telecommunications, China

We propose a silicon-waveguide-assisted tri-layer edge coupler for SiN-BTO heterogeneous photonic platforms. Simulations show 0.88 dB TE single-facet coupling loss at 1550 nm, outperforming a conventional single-layer taper while maintaining good fabrication tolerance.

ACP2026-0701-86

On-Chip Reconfigurable Polarization Beam Splitter Based on Low-Loos Phase-Change Material Sb2Se3

Jiale Chen[1], Yin Xu[1*], Zhikun Hu[1], Lun Zhang[1], Hualong Bao[1*]

1.Soochow University, China

We present an on-chip reconfigurable polarization beam splitter enabled by low-loss phase-change material Sb2Se3. Such device can operate flexibly in both beam splitting and no splitting states, without any etching steps.

ACP2026-0714-39

Ultralow-threshold near-infrared supercontinuum generation in nanophotonic suspended aluminum gallium arsenide waveguides

Luyao Fan[1], Qiankun Li[2], Xueying Sun[2], Bing Xiong[1], Jian Wang[1], Zhibiao Hao[1], Lai Wang[1], Yanjun Han[1], Hongtao Li[1], Lin Gan[1], Jiyuan Zheng[1], Yi Luo[1], Hairun Guo[2*], Changzheng Sun[1*]

1.Tsinghua University, China; 2.Shanghai University, China

Ultralow-threshold near-infrared supercontinuum generation is demonstrated in suspended aluminum gallium arsenide (AlGaAs) waveguides. A three-quarter-octave-spanning supercontinuum from 1100 to 1880 nm is generated with an on-chip pulse energy of only 19.5 pJ.

ACP2026-0714-60

Inverse-Designed Silicon Polarization Splitter-Rotator Covering the E- to U-Bands with Low Crosstalk

Bowen Xia[1,2], Min Liu[2,3*], Daigao Chen[2], Hongguang Zhang[2], Yanjing Zhao[2], Dong Wang[2], Xi Xiao[2]

1.Wuhan Research Institute of Posts and Telecommunications, China; 2.National Optoelectronics Innovation Center, China; 3.Central China Normal University, China

We numerically demonstrate an inverse-designed silicon polarization splitter-rotator on a 220-nm SOI platform, achieving a 350-nm 1-dB bandwidth spanning 1340–1690 nm, insertion loss below 0.25 dB, crosstalk below −33 dB, and robust fabrication tolerance.

ACP2026-0715-144

Turnkey Soliton Microcomb Generation Using Electrically-Tuned Coupled Si3N4 Microrings

Zixuan Jia[1,2], Suwan Sun[1,3], Siyang Li[1,3], Zhiming Shi[1,3], Jiamin Bai[1,3], Hairun Guo[1,3*]

1.Shanghai University, China; 2.Key Laboratory of Specialty Fiber Optics and Optical Access Networks, China; 3.Key Laboratory of Specialty Fiber Optics and Optical Access Networksdept, China

We demonstrate turnkey single-soliton microcomb generation in chip-integrated coupled silicon nitride (Si3N4) microcavity platform by electrically tuning the auxiliary-ring resonance with a direct current (DC) power supply. Reproducible access to the single-soliton state is achieved through electrode-voltage switching.

ACP2026-0715-163

Integrated Heterodyne Laser Doppler Vibrometer on Thin-Film Lithium Niobate

Yuanchen Chen[1], Weixi Liu[1], Fei Huang[1], Xijie Wang[1], Daoxin Dai[1], Yaocheng Shi[1*]

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We demonstrate a miniaturized thin-film lithium niobate laser Doppler vibrometer featuring efficient broadband serrodyne shifting, achieving 3-nm minimum detectable displacement at 300 Hz. This enables a 20.4-μm theoretical maximum displacement, ensuring wide dynamic range.

ACP2026-0715-195

Design of Etchless Photonic Waveguides and Grating Couplers Enabled by Bound States in the Continuum

Deqing Kong[1,2], Fangcheng Cao[1,2], Xingyan Zhao[1,2], Yang Qiu[1,2], Yuan Dong[1,2], Qize Zhong[1,2], Shaonan Zheng[1,2*], Ting Hu[1,2]

1.School of Microelectronics, Shanghai University, China; 2.Shanghai Key Laboratory of Chips and Systems for Intelligent Connected Vehicle, Shanghai University, China

This work investigates an etchless photonic waveguide and grating coupler based on bound states in the continuum (BICs) to address propagation loss and fabrication challenges in AlScN and BTO thin-film photonic platforms.

ACP2026-0715-207

Impact of Fabrication Imperfections on Bandgap Properties of Lithium Niobate Valley Photonic Crystals

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The formation of slanted sidewalls and finite-depth holes is an inherent drawback of imperfect fabrication processes for thin-film lithium niobate (TFLN) valley photonic crystals (VPCs). We investigate the influence of non-vertical sidewalls and partial etching on the valley bandgap properties of suspended LN VPC slabs, using the gap-to-midgap ratio $\Delta\omega/\omega_m$ as a figure of merit. The bandgap width and central wavelength are evaluated by varying the slab thickness, lattice constant, structural asymmetry, and thickness of the unetched LN layer beneath the holes, with fabrication feasibility taken into account. Increasing the asymmetry enhances $\Delta\omega/\omega_m$ up to 200% and reduces its relative sensitivity to sidewall-angle variation from 20% to 12%. Over the investigated ranges, increasing the slab thickness enlarges the bandgap by $\sim$ 71%, while increasing the lattice constant results in reduction in bandgap size by 33%. For a fixed etching depth of 300 nm, a 100 nm unetched LN layer reduces $\Delta\omega/\omega_m$ by more than 70% and substantially increases the influence of non-vertical sidewalls. Our results provide design guidelines for preserving and tuning the valley bandgap in fabrication-realistic suspended LN VPC devices.

ACP2026-0715-28

An Eccentric-Coupled Piezoelectric MEMS Actuator for Tunable Microring Resonators

Miaowen Zheng[1], Lixiang Wu[1*]

1.Northwestern Polytechnical University, China

This work proposes an eccentrically coupled piezoelectric MEMS microring resonator achieving stress focusing and displacement enhancement via geometric eccentricity. Proximal gap closure and high-stress overlap enhance electromechanical coupling, surpassing conventional uniform designs in photonic circuits.

ACP2026-0715-63

Non-volatile Reconfigurable Single- and Coupled Double-Ring Based on Phase Change Materials

Ying Sun[1], Kai Xu[1], Weiquan Wang[1], Jiawei Weng[1], Hongtao Lin[1*]

1.Zhejiang University, China

We demonstrate Sb2Se3-integrated single- and coupled double-ring silicon microring resonators featuring nonvolatile resonance tuning. Independent programming of the coupled rings enables low-power programmable filtering for scalable reconfigurable silicon photonic integrated circuits.

ACP2026-0715-67

Lithography-Aligned Transfer Printing of Electrically Pumped InAs/GaAs Quantum-Dot Micro-RingLasers on Silicon

Wentao Ma[1,2], Jiawei Yang[1,2*], Xuan Pu[1,2], Ying Yu[1,2*], Siyuan Yu[1,2]

1.State Key Laboratory of Optoelectronic Materials and Technologies, Sun Yat-sen University, China; 2.School of Electronics and Information Technology, Sun Yat-sen University, China

A transfer-then-pattern method integrates III-V lasers on silicon, replacing mechanical alignment with lithography for improved robustness. The InAs/GaAs micro-ring laser achieves CW lasing at 15 °C, enabling scalable photonic integration.

ACP2026-0715-91

Bonding-Layer Co-Design of Cavity Q and Threshold Gain in Heterogeneously Integrated III--V/Si PCSELs

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Bonding-layer engineering co-designs hybrid-mode confinement, cavity Q, and threshold gain in heterogeneously integrated III-V/Si PCSELs, revealing distinct Q and gain optima and a fabrication-tolerant route toward scalable C-band surface-emitting light sources for silicon photonic integration.

D3: Active Optoelectronic Devices

ACP2026-0603-1
Broadband F-Band MUTC-PD Module with Low-Loss Waveguide Transition and Integrated Bias-Tee
Yuxin Tian[1,2], Bing Xiong[2*], Changzheng Sun[2], Zhibiao Hao[2], Jian Wang[2], Lai Wang[2], Yanjun Han[2], Hongtao Li[2], Lin Gan[2], Yi Luo[2]
1.China Mobile Research Institute, China; 2.Beijing National Research Centre for Information Science and Technology (BNRist), Department of Electronic Engineering, Tsinghua university, China;
A broadband F-band MUTC-PD module incorporating low-loss passive circuits is demonstrated, featuring only ±2.1 dB power fluctuations over the F band and a high saturated power of −4.4 dBm at 90 GHz.

ACP2026-0624-1
Optimization of Dynamic Extinction Ratio in 100 GHz Electro-Absorption Modulators
Zhenyao Li[1], Lei Yu[1], Shuyan Hao[1], Yifan Xin[1], Guangzhen Luo[1], Yejin Zhang[1], Xuliang Zhou[1], Hongyan Yu[1*], Jiaoqing Pan[1*]
1.Institute of Semiconductors, Chinese Academy of Sciences, China
We propose a composite EAM design with graded SCH, carrier-blocking layer, and reverse doping. Dynamic ER penalty reduces by 46% at 100 GHz. Eye diagrams improve significantly at 400 Gbps, with 98.8% eye-height enhancement.

ACP2026-0626-19
Orbital angular momentum erbium doped fiber amplifier based on a tunable multimode pump
Xinrui Jiang[1], Jin Deng[1], Zhao Tan[1], Taowei Jin[1], Shengzhe Wang[1], Shuxin Liu[1], Baojian Wu[2]
1.Southwest Institute of Technical Physics, China; 2.University of Electronic Science and Technology of China, China
We propose an OAM-EDFA with a tunable multimode pump by simultaneously manipulating phase and polarization through metasurfaces. By adjusting the pump mode components via polarization, 12-mode amplification with a DMG of 0.45 dB is achieved.

ACP2026-0628-7
Generation and Relative Intensity Noise of Few-Cycle Supercontinuum Emission from a Carbon Nanotubes Mode-Locked Fiber Laser
Yifan Wang[1], Kai Wang[1], Qiankun Li[1], Lunian Zhang[1], Jiaxin Xu[1], Chaoqian Wei[1], Meng Gao[1], Hairun Guo[1], Chengbo Mou[1*]
1.Shanghai University, China
We demonstrate supercontinuum generation from a carbon nanotube mode-locked fiber laser. Normal and anomalous dispersion highly nonlinear fibers exhibit lower relative intensity noise than the amplifier output, and cascaded fibers generate 18.79-fs few-cycle pulses.

ACP2026-0629-23
Linewidth-Reduced Optical Injection-Locked Laser Utilizing Continuous Phase-Shift Grating
Zhefan Wang[1*], Mohanad Al Rubaiee[1], Yiming Sun[1], Weiqing Cheng[2], Ahmet Seckin Hezarfen[1], Weiwei Huang[1], Stephen J. Sweeney[1], John H. Marsh[1], Anthony E. Kelly[1], Lianping Hou[1*]
1.University of Glasgow, United Kingdom; 2.China University of Petroleum, China
Continuous phase-shift grating (CPSG) monolithic master–slave DFB lasers combine deterministic wavelength control with strong grating coupling. Two injection-locked devices demonstrate stable locking, SMSRs exceeding 40 dB, and linewidths below 250 kHz near 1545/1550 nm.

ACP2026-0630-119
High-power narrow-divergence VCSEL integrated with surface stepped grating
Yufei Wang[1,2], Kairui Liu[1,2], Yanmei Su[1,2*], Yejin Zhang[1,2*]
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By integrating a stepped grating on the surface of a tunnel-cascaded three-junction VCSEL, single-beam emission with watt-level output power is achieved, with a far-field divergence angle of 1.8°×10°.

ACP2026-0630-21
Overlap-Free High-Speed Wavelength-Swept Laser Based on On-Chip Switching-SOA-Gated REC-DFB Array for HR-FBG Interrogation
Zimeng Liang[1], Pan Dai[1*], Yuan Liu[1], Kaichuan Xu[1], Chaobo Zhu[1], Minglei Li[1], Junwei Dong[1], Zhenxing Sun[1], Feng Wang[1], Xiangfei Chen[1*]
1.Nanjing University, China
A high-speed overlap-free HR-FBG wavelength-swept scheme based on an 8-channel REC-DFB laser array with FPGA-controlled on-chip integrated SOAs achieves 21 nm coverage at 12.5 kHz, demonstrating ±2.5 pm center-wavelength repeatability over 625 cycles.

ACP2026-0630-24

Non-volatileoptoelectronic memory based on ferroelectric material CuInP2S6

Jingmei Zhang[1], Yandong He[1*], Haowen Shu[1*], Xingjun Wang[1*]

1.Peking University, China

We demonstrate for the first timean on-chip non-volatile optoelectronic memory using a two-dimensional ferroelectric CuInP2S6 flake integrated with a silicon Mach–Zehnder interferometer, achieving stable voltage-free optical states, a 1.06 nm spectral shift, and 9.67 dB output power contrast for photonic computing.

ACP2026-0630-9

S-band Thin-Film Lithium Niobate Mach-Zehnder Modulator with 200 GHz EO Bandwidth

Yuefeng Hu[1], Lulu Liu[1], Junbo Zhu[1], Daoqun Liu[1], Yuhan Wang[1], Ke Li[1], Lei Wang[1], Chen Zhang[1*]

1.Pengcheng Laboratory, China

We demonstrate an S-band thin-film lithium niobate Mach-Zehnder modulator featuring a Vπ·L of 2.14 V·cm and 1.59 dB EO roll-off at 145 GHz. Physics-informed extrapolation indicates a 3-dB EO bandwidth exceeding 200 GHz, providing a promising platform for optical interconnects operating beyond 200 GBaud.

ACP2026-0701-124

Surface-Illuminated Ge-on-SOI Photodetector at 2 μm Wavelengths Based on Multi-Holes Array Photonics-Crystal Micro-cavity

Kangli Zhang[1], Zhenglong Zhu[1], Wei Wang[2], Baiyin Wang[2], Nan Ye[1*]

1.Shanghai University, China; 2.Shanghai Industrial Technology Research Institute, China

A 2 μm two-photon absorption surface-illuminated Ge-on-SOI photodetector is demonstrated with the multi-holes array photonics-crystal cavity. Fabricated by the 8-inch silicon photonics process platform, it achieves a 1.61 mA/W photoresponsivity and 25 GHz RF bandwidth.

ACP2026-0701-13

Impact of Residual Amplitude Modulation in Depletion-Mode Silicon-Photonic Phase Modulators on Fiber-Optic Gyroscopes

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1.National Information Optoelectronics Innovation Center China Information Communication Technologies Group Corporation, China

We study residual amplitude modulation in depletion mode silicon phase modulators and propagate it into open loop fiber optic gyroscope bias, revealing lock in leakage, modulation depth amplification and practical design rules for compensation strategies.

ACP2026-0701-147

Suppression of Servo Bump in a passivelyHarmonic Mode-Locked Fiber Laser via Second-Order Phase Compensation

Jiaxin Xu[1], Qianqian Huang[1], Kai Wang[1], Lilong Dai[1], Yifan Wang[1], Haochen Tian[1],Youjian Song[1], Linghui Yang[1], Chengbo Mou[1*]

1.Shanghai University, China

We report a cascaded RC second-order phase-lead scheme to suppress relative intensity noise in harmonic mode-locked fiber lasers. Overcoming PI loop delays, it suppresses the servo bump and reduces integrated RIN to 0.027%.

ACP2026-0701-15

Multistate Dark-Bright Composite Soliton Pairs in a Short-Cavity NL-MMI Fiber Laser

Enfan Zhou[1], Dongfang Jia[1*], Danyang Wang[1], Yi Liu[1], Chunfeng Ge[1], Zhaoying Wang[1]

1.Tianjin University, China

We report a short-cavity NL-MMI erbium-doped fiber laser producing switchable dark-bright, bright-dark, composite and high-order dark-bright soliton pairs at 54.5 MHz third-order repetition rate, demonstrating its capacity for high repetition rate dark-light composite soliton manipulation.

ACP2026-0701-161

Mid-Infrared Circular Polarization Detection based on Chiral Metasurface Integrated Two-Dimensional Black Phosphorus

Yihong Chen[1], Zhanlong Lou[1],Yang Chen[1], Yangcan Long[1], Mingjin Dai[2*], Chao Wang[1*]

1.Huazhong University of Science and Technology, China; 2.Zhengzhou University, China

We propose a black phosphorus-integrated chiral MIM metasurface detector for mid-infrared circular polarization, achieving 89% CD and 1.61 g-factor via the photothermoelectric effect.

ACP2026-0701-175

Single-shot Polarization Dynamics During Soliton Explosions in a mode-locked fiber laser

Meng Gao[1], Qianqian Huang[1], Fan Wu[1], Bo Zhang[1], Yifan Wang[1], Lunian Zhang[1], lilong Dai[1], Sergey V. Sergeyev[2], Chengbo Mou[1*]

1.Shanghai University, China; 2.Aston University, United Kingdom

We report the first single-shot observation of soliton explosions in a CNT mode-locked laser. Crucially, both the spectral and polarization evolutions exhibit identical stable-chaos-stable transitions, accompanied by consistent energy relaxation oscillations.

ACP2026-0701-177

Analysis of Uniaxially Tensile-Strained Five-Layer Ge/SiGe Coupled Quantum Wells for Optical Modulators

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We propose uniaxially tensile-strained five-layer Ge/SiGe asymmetric coupled quantum wells for C-band operation. Achieving a 6.16 absorption contrast and a 1.53×10^{-2} electro-refractive index change under 1.1% strain, it promises simultaneous high-efficiency electro-absorption and phase modulation.

ACP2026-0701-18

1550 nm High-Power Buried-Heterostructure Distributed Feedback (DFB) Laser with a Partially Corrugated Grating Design

Yifan Xin[1,2], Lei Yu[1,2], Zhenyao Li[1,2], Xuliang Zhou[1,2], Pengfei Wang[1,2], Yejin Zhang[1,2], Jiaoqing Pan[1,2*]

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We reporta novel BH-DFB laser. By employing an optimized partially-corrugated-gratingdesign beneath the active region, the device achieves an output power of 122 mW@500mA@25°C, with a SMSRexceeding 50dB, and a RIN below −158dB/Hz.

ACP2026-0701-206

Segment-Voting-Based Synchronization Parameter Selection Method for Asynchronous Optical Sampling

Meng Qiu[1], Feng Tian[1], Junjie Jiang[1], Chuanji Yan[1], Jianwei Zhou[1], Jing Zhang[1]

1.Beijing University of Posts and Telecommunications, China

A segment-voting-based synchronization parameter selection method is proposed in this paper. The proposed approach can identify a synchronization parameter more suitable for waveform recovery beyond the global maximum spectral peak. Experimental results show that, compared with the conventional direct coarse-to-fine synchronization estimation procedure, the Pearson correlation coefficient between the recovered waveform and the original waveform is improved by 8.167%.

ACP2026-0701-44

Hybrid Integrated Multi-Wavelength Laser Based on a Multi-Microring External Cavity

Yi Xiao[1], Hongfei Zhang[1], Yilin Wu[1], Liwei Tang[2], Hui Wang[2], Ciyuan Qiu[3], Wendi Li[4], Minghua Chen[1*]

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We demonstrate an eight-wavelength hybrid integrated laser using a silicon nitride multi-microring external cavity, achieving C-band lasing with 200-GHz spacing, 50-dB SMSR, and 73-kHz integrated linewidth for optical interconnects.

ACP2026-0701-53

TCAD-Assisted Analysis of Doping-Diffusion-Induced Performance Variation in 12-inch SOI Dual-Drive Depletion MZMs

Xuankai Fang[1], Chunlei Sun[1], Zhiqiang Zhang[1], Jia Guo[1*], Huiyun Jiang[1*], Hongtao Lin[1,2*]

1.College of Integrated Circuits, Zhejiang University, China; 2.College of Information Science and Electronic Engineering, Zhejiang University, China

Process-aware dopant modeling is proposed for silicon depletion MZMs. Experiments reveal IMPdis-dependent loss, with α increasing from 5.44 to 8.50 dB/cm as IMPdis decreases, while VπL changes moderately, highlighting TCAD necessity for reliable manufacturable-device prediction.

ACP2026-0701-98

A Chip-Scale Thermally Self-Calibrated Lithium Niobate Electro-Optic Modulator with Dual-Domain Feedback for Robust Resonance Stabilization

Chenyang Wu[1], Zhen Zhen[1], Hui Chen[1], Siyue Jin[1], Zhenyi Yang[1], Lei Wang[1*]

1.Peng Cheng Laboratory, China

A thermally self-calibrated LNOI electro-optic modulator with dual-domain feedback is presented. The architecture combines feedforward thermal compensation and closed-loop optical stabilization, achieving 0.02 nm locking error and 5% valley fluctuation without external TEC, preserving the intrinsic high-Q response.

ACP2026-0707-3

High-Speed Fiber Bragg Grating Demodulation Using an Adaptive Scan-Window Strategy with a Wavelength-Tunable Laser

Xu Wang[1], Rui Zhou[2*], Yuanle Su[1], Yang Zhao[3], Tian Guo[3], Huiran Cao[4], Zhiguo Zhang[1]

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Full-range scanning limits tunable-laser FBG demodulation speed. An adaptive scan-window strategy for DSDBR lasers is proposed, increasing the demodulation rate 39-fold while maintaining picometer accuracy, enabling low-cost, dynamic measurements without major hardware changes.

ACP2026-0712-5

Novel Michelson interferometer modulator with low return loss

Yao Sun[1*], Shihuan Ran[1], Linjie Zhou[1]

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We demonstrate a Michelson interferometer modulator (MIM) with a return loss reduction of 7.5 dB. The device employs TE0/TE1 mode-selective routing implemented through multimode (de)multiplexers and multimode-compatible PIN phase shifters.

ACP2026-0713-23

Deep Learning-Driven Wide and Flat Gain Spectrum Inverse Design for Power-Uniform Multi-Wavelength Laser Arrays

Yunping Cui[1], Bing Xiong[1], Changzheng Sun[1], Jian Wang[1], Zhibiao Hao[1], Lai Wang[1], Yanjun Han[1], Hongtao Li[1], Lin Gan[1], Yi Luo[1]

1.Tsinghua University, China

We report a deep-learning inverse-design framework for quantum wells to achieve wide and flat gain. Experimentally, the optimized multi-wavelength DFB lasers yield 80% and 60% power uniformities over 36-nm and 53-nm spans, respectively.

ACP2026-0714-65

High-Speed Electro-Optic Fano Switch and Modulator on Thin-Film Lithium Niobate

Ziliang Ruan[1], Xijie Wang[1], Weilong Ma[2], Kaixuan Chen[2], Liu Liu[1*]

1.Zhejiang University, China; 2.South China Normal University, China

We propose and experimentally demonstrate a high-speed electro-optical Fano switch on thin-film lithium niobate. The device employs a side-coupled traveling-wave-like Fabry–Pérot cavity formed by two apodized asymmetric multimode waveguide gratings. It exhibits an average spectral slope of 165.6 dB/nm, a normalized on-chip insertion loss of 0.39 dB, an extinction ratio exceeding 29 dB, an effective half-wave voltage of 26.8 V, and a tuning efficiency of 7.2 pm/V. A 12.6-GHz electro-optical bandwidth and a clearly open 30 Gb/s on–off keying eye diagram are demonstrated.

ACP2026-0714-66

Investigation of Scaling Exponents in Coupling Modes of Raman Random Fiber Laser

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Owing to disorder and mode interactions, RFLs show collective dynamics resembling brain activity. We transfer PRG — a tool for neural criticality — to a Raman RFL, revealing scaling analogies to brain fMRI, hinting at universal principles across complex systems.

ACP2026-0715-10

1.77 μm GHz Pulse Generation via Soliton Self-Frequency Shift in a Fiber Laser

Lunian Zhang[1], Qianqian Huang[1], Mengxue Guo[1], Kai Wang[1], Yifan Wang[1], Yuhang Yan[1], Jiaxin Xu[1], Lilong Dai[1], Chengbo Mou[1*]

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We demonstrate 1.77-μm GHz solitons generated by soliton self-frequency shift in dispersion-shifted fiber using a passively harmonic mode-locked Er-doped fiber laser, achieving a 199-nm shift to the longest wavelength reported for this configuration.

ACP2026-0715-141

TemperatureDependent Nonlinear Optical Propertiesof Carbon NanotubesSaturable Absorberin a Harmonic Mode-Locked Fiber Laser

Yuhang Yan[1], Qianqian Huang[1], Lilong Dai[1], Lunian Zhang[1], Yifan Wang[1], Hairun Guo[1], Chengbo Mou[1*]

1.Shanghai University, China

Wereveal the impact of temperature response characteristics of the single-walled carbon nanotubes saturable absorber on the harmonic mode-locking performance. It is found that elevating the temperature simultaneously reduces the non-saturable loss and the effective modulation depth of the single-walled carbon nanotube saturable absorber, thus leading to the spectral redshift and decreasing spectral bandwidth and pump power necessary for the harmonic mode-locking.

ACP2026-0715-158

Practical Erbium-Doped Optical Frequency Comb on a Glass-Ceramic Substrate

Rongwei Zhu[1], Hongjian Yang[1], Ti Qian[1], Liang Hu[1*], Guiling Wu[1], Jianping Chen[1]

1.Shanghai Jiao Tong University, China

This paper presents a practical erbium-doped optical frequency comb based on nonlinear amplifying loop mirror (NALM) mode locking. The mode-locked laser is integrated onto a low-thermal-expansion glass-ceramic substrate, enabling a compact free-space optical layout.

ACP2026-0715-162

Room-Temperature Continuous-Wave Quantum-Dot Photonic-Crystal Nanobeam Laser with an Electrical-Injection-Compatible Architecture

Xuebo Zhao[1,2], Wentao Ma[1,2], Kun Zhan[1,2], Jiawei Yang[1,2], Ying Yu[1,2*], Siyuan Yu[1,2]

1.State Key Laboratory of Optoelectronic Materials and Technologies, China; 2.School of Electronics and Information Technology Sun Yat-sen University, China

Here, we demonstrate a room-temperature continuous-wave optically pumped InAs/GaAs quantum-dot photonic-crystal nanobeam laser. A linearly graded one-dimensional photonic-crystal cavity provides strong optical confinement, with a measured quality factor of approximately 4200.

ACP2026-0715-24

Wavelength-Tunable Dissipative Solitons From an All-Normal-Dispersion NOLM Mode-Locked Yb-Doped Fiber Laser

Jianwei Zhou[1], Feng Tian[1*], Jing Zhang[1], Qi Zhang[1], Haipeng Yao[1], Ran Gao[2], Qinghua Tian[1], Fu Wang[1]

1.Beijing University of Posts and Telecommunications, China; 2.Beijing Institute of Technology, China

A wavelength-tunable all-normal-dispersion Yb-doped mode-locked fiber laser is demonstrated, achieving stable dissipative-soliton operation from 1032 to 1062 nm while maintaining pulse energies above 1.6 nJ throughout the tuning range.

ACP2026-0715-6

Low-Voltage High-Speed Lateral Ge-on-Si Avalanche Photodiode with an Intrinsic-Si-Free Doping Architecture

Xu Liu[1*], Huimin Yan[1], Jialin Cheng[1], Shangtong Zou[1], Jiayin Yan[1], JianJun He[1]

1.Zhejiang University, China

We demonstrate a 445GHz gain-bandwidth product (GBP) low-voltage lateral Ge-on-Si avalanche photodiode utilizing an intrinsic-Si-free architecture to achieve a highly reduced breakdown voltage of -7.4V.

ACP2026-0715-68

Topological Structured Light Field to Photocurrent Conversion in Two-Dimensional Materials

Yujie Tao[1], Ruiguang Yao[1], Yanfei Mu[1], Xiaoping Huang[1*]

1.University of Electronic Science and Technology of China, China

We demonstrate topological structured-light-to-photocurrent conversion in graphene/hBN, where six-beam optical textures modulate macroscopic structural currents. Amplitude, phase, and polarization topology map to distinguishable electrical signatures, enabling compact structured-light detection and decoding for integrated optical communication.

ACP2026-0715-95

Erbium-Doped Silicon Nitride Waveguide Amplifiers under Bidirectional Pumping at 980 and 1480 nm

Yuxiang Yu[1], Qingming Chen[1*], Chunxu Wang[1], Yongguang Xiao[1], Zhaohui Li[1*]

1.Sun Yat-sen University, China

Bidirectionally pumped erbium-doped silicon nitride amplifiers show wavelength-dependent operating regimes: 1480-nm pumping favors long devices and high input signal power, whereas 980-nm pumping provides higher gain in short devices under small-signal operation for integrated photonics.

D4: Passive Photonic Components Across Domains

ACP2026-0628-6

Spectral Recovery for Integrated Photonic Devices Based on Fourier Neural Operator

Yingxue Zhang[1], Zhenyu Zhao[1], Yikai Su[1], Xuhan Guo[1]

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We propose a system based on Fourier neural operator for spectral recovery of unknown devices, enabling resolution adjustable prediction, and provide a promising method for analyzing the intermediate devices of integrated photonic systems.

ACP2026-0629-27

Study of transverse mode filter based on ring core fiber in a laser cavity

Yafan Su[1,2], Youchao Jiang[1,2*], Zhiming Yao[1,2], Shiying Xiao[1,2], Beilei Wu[1,2], Wenhua Ren[1,2], Guobin Ren[1,2]

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An all-fiber transverse mode filter based on ring-core fiber (RCF) is proposed for high-order mode control in few-mode fiber lasers. By exploiting the mismatch of transverse mode field distributions between the few-mode fiber and RCF, mode loss is introduced to achieve selective filtering and enable mode competition in the laser cavity. A vectorial overlap-integral model is employed to evaluate mode coupling efficiencies of three RCF designs, showing that RCF3 exhibits the strongest mode selectivity. Experimental results demonstrate that a 3.8 cm RCF3 inserted into a fiber laser cavity enables stable LP_{11} mode lasing at 1548.65 nm, indicatingeffective suppression of the fundamental mode and selective excitation of higher-order modes.This filter reducesthe need for complex spatial optical components, providing both a design reference for mode control in all-fiber high-order transverse-mode lasers.

ACP2026-0630-18
Tunable optical delay line based on thin-film lithium niobate at 2- μ m waveband
Shihan Hong[1,2], Weixun Zhu[2], Lei Wang[1], Zejie Yu[2], Yiwei Xie[2], Daoxin Dai[2*]
1.Pengcheng Laboratory, China; 2.Zhejiang University, China
We demonstrate a tunable optical delay line at 2- μ m waveband based on thin-film lithium niobate, with low propagation loss of 0.27 dB/cm and switching speed of 27 ns, featuring tuning range of 511 ps.

ACP2026-0630-19
Few-Mode Gain Flattening Filter Based on Core-Mode Coupling with Long-Period Fiber Gratings
Shuailuo Huang[1*], Yanbiao Chang[1], Shikui Shen[1], He Zhang[1], Zelin Wang[1], Guangquan Wang[1], Xiongyan Tang[1]
1.China Unicom, China
Relying on independent coupling from low-order modes to high-order modes with LPFGs in the core of weakly-coupled FMF, a few-mode gain flattening filter is designed, achieving a flatness of 0.51 dB at C band.

ACP2026-0630-23
Reconfigurable Single-SLM Folded Multi-Plane Diffractive Optical Network for Direct Imaging through a Ring-Core Fiber
Xinyi Deng[1,2], Sitong Zhou[1,2*]
1.School of Electronic Engineering, Bejing University of Posts and Telecommunications, China, China; 2.State Key Laboratory of Information Photonics and Optical Communications, Beijing University of Posts andTelecommunications, China
A reconfigurable single-SLM folded diffractive optical transmission system is proposed for ring-core-fiber imaging, enabling programmable speckle-field reconstruction and target-image recovery through cascaded phase modulation and free-space propagation without explicitly measuring the complex fiber transmission matrix.

ACP2026-0630-41
Interaction- and Polarization-Resolved Design of a Multi-Segment Polarization Volume Grating Out-Coupler for Augmented Reality Waveguide Displays
Qiyun Zhu[1], Yu Zhang[2], Lei Zhang[1], Yue Wang[1], Qi Wei[2], Hongfei Qian[2], Bin Huang[1*]
1.Hangzhou Institute of Technology, Xidian University, China; 2.K-tronics (Su Zhou) Technology Co., LTD, China;
An interaction- and polarization-resolved multi-segment PVG out-coupler improves AR waveguide eyebox uniformity by jointly using beam-hit position, local power, and circular-polarization components, increasing minimum retinal efficiency and reducing leakage without changing pupil-expansion geometry or topology.

ACP2026-0630-64
Genetic Algorithm-Based Inverse Design of a Topological Beam Splitter with Arbitrary Power Ratios
Yubing Wang[1], Ganggang Li[1], Faisal Nadeem Khan[1*]
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This work presents a topologicalbeam splitter with arbitrary power splitting ratios. Genetic algorithm is used to inversedesign the region near the splitting point. Transverse spin matching is introduced to improvethe coupling efficiency.

ACP2026-0630-95
Ultra-Compact Direction-Encoded Diffractive Chip for Asymmetric Optical Transmission
Kangrui Wang[1*], Tianhao Fu[1], Xiaoxiao Ma[1], Junjie Chen[1], Jian Wang[1]
1.Huazhong University of Science and Technology, China
We demonstrate an ultra-compact bidirectional diffractive neural network chip fabricated by two-photon polymerization, which encodes propagation direction for asymmetric optical transmission and achieves distinct forward/backward transformations with experimental PCCs exceeding 0.8 in passive integrated optics.

ACP2026-0701-101
LLM-Driven Iterative LCoS Phase-Map Refinement with Physics-Gradient Updates for Port-Power Distribution Control in Wavelength Selective Switch
Zhixiong Zheng[1], Mingzhe Chen[1], Zekun Niu[1*], Weisheng Hu[1], Lilin Yi[1*]
1.Shanghai Jiao Tong University, China
An LLM-driven iterative refinement method is proposed for LCoSphase map generation and port power distribution control in a WSS.

ACP2026-0701-110

Comparison of Fiber Nonlinear Expansion and Shaping Methods for Cavity-Less Optical Frequency Comb Generation

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We compare different frequency comb expansion architecture based on fiber loop mirror for cavity-less EO-comb-seeded parametric frequency comb generation. Specifically, we compare the spectral shape, flatness and optical signal to noise ratio (OSNR) of three types of comb expansion and shaping systems, including conventional nonlinear optical loop mirror (NOLM), nonlinear amplifying loop mirror (NALM) and our recently proposed chirp-nonlinear optical loop mirror (C-NOLM). We show that C-NOLM system achieves 3 dB flatness over 35nm and OSNR0.1nm higher than 33 dB, which is promising for high channel count wavelength-division multiplexing (WDM) transmission systems

ACP2026-0701-197

Fast Multilayer Aberration Evaluation for 1550 nm STED Beam Focusing

Xiaojie Guo[1], Baoying He[1], Boyi Yang[1], Wenhua Ren[1], Youchao Jiang[1], Guobin Ren[1*]

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A fast Richards-Wolf/S-matrix/CZT-FFT model evaluates 1550 nm NIR-II STED focusing and shows that oil-coverslip-sample matching with a 0.13-0.17 mm coverslip best preserves the annular depletion focus by reducing spherical aberration, side lobes, and axial shift.

ACP2026-0701-210

Generalized formulation of topological skyrmion and bimeron beams

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Optical skyrmion and bimeron beams are topologically structured light fields whose polarization textures wrap the Poincaré sphere, with promising applications in optical communication, metrology, and topological photonics. Existing constructions fall into two separate frameworks: a spinor-based formulation

ACP2026-0701-232

Broadband Spatial Mode Multiplexer for a 7-Core, 6-Mode Multicore Fiber Based on Multi-Plane Light Conversion

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We propose a multi-plane light conversion based spatial multiplexer for 7-core, 6-mode multicore fibers over the S+C+L bands, achieving an insertion loss of 1.4 dB, a mode-dependent loss of 1.6 dB, and an average crosstalk of -37.2 dB at 1550 nm.

ACP2026-0702-7

Six-Channel Silicon Photonics Wavelength Beam Combiner for the 2 μm and 2.3 μm Wavebands

Ruoyu Xiong[1], Kan Huang[1], Songjian Lin[1], Jincheng Wei[1], Ruijun Wang[1*], Siyuan Yu[1]

1.Sun Yat-sen University, China

We demonstrate a six-channel silicon-photonic wavelength combiner for broadband spectroscopy in the 2 and 2.3 μm wavebands. Integrating two intra-band MZI networks and a 2/2.3 μm diplexer, it achieves minimum losses of -3.0 and -5.1 dB.

ACP2026-0703-3

Ultra-broadband Femtosecond Soliton Molecule Generation in an Er-doped All-fiber Laser

Qianqian Huang[1], Zinanian Huang[1, 2], Zhijun Yan[3], Chengbo Mou[1*]

1.Shanghai University, China; 2.Shanghai Institute of Technical Physics, China; 3.Huazhong University of Science and Technology, China

We demonstrate the generation of ultra-broadband femtosecond soliton molecules in an Er-doped all-fiber laser using the nonlinear polarization rotation technique. Through precise engineering of intracavity dispersion and nonlinearity, the fiber laser directly emits stable soliton molecules with a pulse duration of 78 fs and a 3 dB spectral bandwidth of 104.11 nm, setting the highest bandwidth record achieved to date for soliton molecules in fiber lasers. This ultra-broadband femtosecond soliton molecule all-fiber source represents a highly promising candidate for frontier optical applications.

ACP2026-0713-26

Mode Field Diameter Estimation in Antiresonant Hollow-core Fibers from Propagation Constant Difference

Minghao Zhong[1], Shaoyong Ji[1], Caoyuan Wang[1], Limin Xiao[1*]

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The mode-field diameter (MFD) is an important parameter in anti-resonant hollow-core fibers (AR-HCFs). Here we propose an eigenvalue-based method to estimate the MFD from the propagation constant difference between the LP01 and LP11 core modes, derived from a Bessel-field approximation combined with the definition. Finite-element simulations of nested AR-HCFs show agreement within 1% over parameter sweeps of core diameter, wavelength, and cladding structure in the anti-resonant regime, with larger deviations near resonance. The method provides a fast way to estimate the AR-HCF mode size without repeated near-field integration.

ACP2026-0714-1

Silicon Nitride Metalens-Based Imaging Systems

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This paper proposes and implements a broadband silicon nitride metalens operating in the visible band. In simulation design, a design framework combining polynomial phase functions and genetic algorithm optimization is established, achieving efficient design of millimeter-scale metalenses. In fabrication, by adjusting etching parameters, high-aspect-ratio silicon nitride nanopillar arrays are successfully fabricated. Finally, the focal length and point spread function of the fabricated metalens are experimentally tested, demonstrating excellent imaging performance.

ACP2026-0714-23

Low-Loss Directional Couplers Based on Femtosecond-Laser-Written Three-Dimensional Glass Waveguides

Rongyi Lin[1], Xinliang Xu[1], Zaichuan Xing[1], Jianning Su[1], Ting Lei[1*]

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Femtosecond laser written glass waveguides enable low loss three dimensional photonic integration with tunable directional coupling, wavelength dependent transfer, and multiwaveguide field control for versatile passive optical functions beyond conventional two port power splitting schemes.

ACP2026-0715-115

Spectral-Continuity and Low-Rank Residual Network for Diffractive Snapshot Hyperspectral Reconstruction

Zaiwei Cao[1], Zhenming Yu[1,2*], Tongshuo Zhang[1], Jingyue Ma[1], Liang Lin[1], Kaiang Yang[2], Kun Xu[1,2]

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We propose a Spectral-Continuity and Low-Rank Residual Network (SCLRN) that combines adjacent-band continuity with low-rank spectral basis modeling for end-to-end diffractive snapshot hyperspectral reconstruction. The results demonstrate 31-band hyperspectral reconstruction from 400 to 700 nm, achieving improvements of 0.88 dB in PSNR and 0.002 in SSIM while reducing computational cost by 22.1%.

ACP2026-0715-138

Four-Core Fiber Coupler Based on Helical Long-Period Fiber Gratings

Suying Wu[1], Siyu Chen[1], Rui Zhang[1], Wei Chen[1], Chengbo Mou[1], Yunqi Liu[1*]

1.Shanghai University, China;

A four-core fiber coupler based on helical long-period fiber gratings is demonstrated. Tunable grating periods enable wavelength-selective inter-core coupling and multiport power transfer, providing an all-fiber solution for space-division multiplexing systems.

ACP2026-0715-166

High-Q Fabry-Pérot Cavity with Retroreflector on AlGaAs-on-insulator Platform

Zhichao Qian[1,2], Zhengshun Lei[3], Yikai Su[3], Weiqiang Xie[3*]

1.School of Information and Electronic Engineering, Shanghai Jiao Tong University, China; 2.State Key Laboratory of Photonics and Communications, China; 3.Shanghai Jiao Tong University, China

This paper proposes and experimentally demonstrates a high-Q Fabry-Perot cavity using conical reflectors on the AlGaAs-on-insulator platform. The measured Q factor is as high as 0.3×10^6 at 1550nm.

ACP2026-0715-176

Compact and Broadband Dual-polarization 2 × 2 Multimode-Interference Coupler on AlGaAs-on-insulator Platform

Yonggang Han[1], Zhengshun Lei[1], Yikai Su[1], Weiqiang Xie[1*]

1.Shanghai Jiao Tong University, China

We design and demonstrate a dual-polarization 2 × 2 multimode-interference coupler on the AlGaAs-on-insulator platform. The coupler features a 2.169 μm × 17.160 μm multimode region and operates over an optical bandwidth exceeding 160 nm.

ACP2026-0715-182

Generation of Second- and Third-order Orbital Angular Momentum Modes Using a Helical-core Long-Period Fiber Grating

Aozuo Li[1], Xiaolong Fan[1], Lu Chen[1], Siyu Chen[1], Chengbo Mou[1], Yunqi Liu[1*]

1.Shanghai University, China

Wedemonstrate the simultaneous generation of second- and third-order orbital angular momentum (OAM)modes using a helical-core long-period fiber grating (HC-LPFG) fabricated in a few-mode fiber by CO2 laser.

ACP2026-0716-5

Data-Driven Bidirectional Modeling for Optical Field Control in Multimode Fibers

Yifan Sun[1], Jun Wang[1], Zhihong Liu[1], Tianyun Wang[1], Nan Chi[1], Ziwei Li[1*]

1.Fudan University, China

This paper presents a data-driven bidirectional modeling framework for multimode fiber output control, enabling point focusing, two-dimensional scanning, and image projection without reference beams or mechanical scanning components.

Poster Session-N-Track

Content

N1: Network, System and Service Innovations

ACP2026-0608-1
Link-Level Time-Domain Slicing for Deterministic Resource Isolation in AI Interconnect Networks
Tingyi Yao[1], Taoning Zheng[1], Jiayuan Li[1], Bitao Pan[1*]
1.Beijing University of Posts and Telecommunications, China
We propose a link-level time-domain network slicing mechanism for AI training interconnects where bulk traffic usually affects synchronization-critical flows. The proposed mechanism features hard isolated slicing and class-based flow scheduling, providing deterministic performance for critical AI flows. An Astra-Sim and ns-3 evaluation against a RoCE baseline shows up to 95.6% reduction in p99 critical-flow latency and consistently improved collective completion times.

ACP2026-0617-3
Passive Optical Identification and Resource Management of ODF Ports and Fiber Links Based on FiberGrating ArrayEncoder
Junfeng Cheng[1*], Yishuai Wang[1], Wei Shi[1], Guoqin Liao[1], Weiqi Hu[1], Ming Li[2], Lei Yu[2], Xiaohe Lu[2], Ruisi Wang[3], Yijie Zhang[3], Xiangpeng Xiao[3], Zhijun Yan[3]
1.Xiaohongshu Inc, China; 2.ACCELINK Technologies CO., LTD., China; 3.Huazhong University of Science and Technology, China
A COTDR-based ODF resource management scheme using 4-bit grating-arrayencoderis demonstrated. Accurate identification of ODF ports and fiber links is achieved with only 0.01 dB additional insertion loss, enabling automated optical resource management.

ACP2026-0624-5
Experimental Evaluation on Low-Latency Characteristics of OSU in Optical Transport Networks
Ruiquan Jing[1*], Heng Zhou[1], Tao Ma[2], Wei Wang[2], Lingquan Wang[2], Guoxin Zhang[3]
1.China Telecom Research Institute, China; 2.China Telecom Corporation Limited, China; 3.China Information Consulting & Designing Institute Co. Ltd., China
This paper evaluates OSU's low-latency and high-efficiency performance for OTN private line services via theoretical analysis, lab tests and field trials, verifying its significant advantages over traditional VC and ODU for next-generation metro OTN deployment.

ACP2026-0626-7
Energy-Efficient Neighbor Discovery Protocol for Ultraviolet Communication Networks
Tian Luo[1], Yong Zuo[1*], Dong Zhu[1], Siyuan Cai[1], Xiaobin Hong[1], Jian Wu[1]
1.Beijing University of Posts and Telecommunications, China
Ultraviolet communication networks need reliable neighbor discovery. We introduce hyper-cyclic wake scheduling, whose extended listening window removes phase blind spots, reducing energy by 73% versus always-awake discovery while limiting average latency growth to 80%.

ACP2026-0629-33
ATP-aware Constellation Sizing: How Many LEO Satellites Are Enough?
Chang Min[1], Hui Yang[1*], Zhe Niu[1], Buzheng Wei[2], Qiuyan Yao[1], Yuxuan Yan[1], Jie Zhang[1]
1.Beijing University of Posts and Telecommunications, China; 2.China Unicom Research Institute, China
We propose LACP, a constellation planning framework for satellite optical networks. Using DPSO to optimize Walker parameters, we identify an ATP-constrained critical scale and derive optimal constellations that enhance QoS satisfaction.

ACP2026-0630-121
End-to-End Scheduling for Maritime IoT over Spaceborne Non-Terrestrial Networks with Time-Sensitive Networking
Zhixiang Shi[1], Hongxing Li[1*], Lei Yao[2], Pengfei Wang[2], Yiping Ren[2], Wen Ying[2], Guochu Shou[2]
1.Beijing University of Posts and Telecommunications, China; 2.China Star Network Digital Technology Co, China
We propose a PPO-based TSN joint scheduling scheme for LEO spaceborne optical networks, coordinating space-ground links and priority queues to enhance deterministic multimodal maritime IoT transmission, latency, schedulability, and reliability.

ACP2026-0701-121
Demand-Aware Deployment Ordering for Partially Deployed Laser Inter-Satellite Networks
Xingyao Liu[1*], Chen Lin[1], Tao Li[1], Wenhu Fan[1,2], Xin Liu[1,2], Yifan Zhu[2,3]
1.The 29th Research Institute of China Electronic Technology Group Corporation, China; 2.Aerospace Products Department The 29th Research Institute of China Electronics Technology Group, China
This paper optimizes the staged deployment ordering for LEO megaconstellations. Evaluations on two representative constellations reveal that our strategy improves early-stage coverage by a factor of 5–7 while maintaining low latency. Strong robustness is verified.

ACP2026-0701-168

Demonstration of Flexible Timeslot Switching Architecture for Spaceborne Optical Networks

Zihan Qiu[1], Changsheng Yang[1], Xiangyu Ge[1], Bitao Pan[1], Yu Zhou[1], Xuwei Xue[1,2*], Bingli Guo[1,2*], Shanguo Huang[1*]

1.Beijing University of Posts and Telecommunications, China

We propose a flexible time-slot switching optical-electrical hybrid architecture for multi-service spaceborne optical networks and experimentally demonstrates its feasibility on an engineering prototype of a spaceborne switching payload.

ACP2026-0701-235

A Unified Interpretable Semantic Framework for Multi-Modal Fiber Sensing Under Data Scarcity

Khouloud Abdelli[1*]

1.Nokia Bell Labs, Germany

We propose a unified semantic framework for multi-modal fiber sensing that transforms heterogeneous measurements into shared physics-grounded descriptors. Retrieval-assisted reasoning enables interpretable and data-efficient inference without retraining, achieving robust performance different sensing modalities.

ACP2026-0714-15

High-Performance Golay-Coded Correlation OTDR for Dual-Port ONU Monitoring and Protection in Smart Grid EPONs

Zihao Fu[1,2*], Peizhe Xin[1,2], Zhibo Xu[1,2], Zhiyi Chen[1,2], Yue Wu[1,2], Zhaojun Xu[1]

1.State Grid Economic and Technological Research Institute Co., Ltd, China; 2.Beijing Key Laboratory of Low-Carbon and Flexible Urban Power Supply Technology and Equipment, China

We propose a complementary Golay-coded C-OTDR for smart grid EPON monitoring. Eliminating algorithmic sidelobes, it achieves 0.6 m resolution and -25dBm sensitivity over 20-km, ensuring precise fault localization and seamless dual-port ONU protection switching.

ACP2026-0715-122

Backup Ground Station Preselection based on Rainfall Morphology inOptical Satellite Networks

Linhao Zhang[1], Yongli Zhao[1*], Wei Wang[1], Shiyu Yang[1], Zijian Cui[1], Jie Zhang[1]

1.Beijing University of Posts and Telecommunications, China

Organized precipitation can cause correlated outages of multiple ground stations. We propose a backup ground station preselection based on rainfall morphologytoextract morphology-dependent strong core propagation patterns and select safer backup stations in advance.

ACP2026-0715-177

Handover-Aware Alarm Management for Dynamic LEO Network Services

Zhenyi Li[1], Xiaodan Yan[1*], Yongli Zhao[1], Jian Yang[1]

1.Beijing University of Posts and Telecommunications, China

Low Earth orbit access transitions can trigger nuisance service alarms. We propose a calibrated residual Handover Normality Score, yielding a 1.58 percent false-alarm rate and full recall at the primary evaluated attack strengths.

ACP2026-0715-49

Wavelength-Dependent Loss-Aware Protection Switching Threshold Design for Reliable C+L-Band Data-Center Interconnects

Xiaoyun Li[1,2], Xin Li[1,2], Wei Wang[1,2], Yongli Zhao[1,2*], Jie Zhang[1]

1.Beijing University of Posts and Telecommunications, China; 2.Beijing University of Posts and Telecommunications Shenzhen Institute, China

Fiber bending induces wavelength-dependent loss (WDL) in C+L-band systems, causing QoT violations before conventional optical multiplex section protection switching. A WDL-aware threshold design eliminates unsafe switching and achieves 100% protection safety for reliable data-center interconnects.

ACP2026-0715-97

Traffic-Aware Dynamic Scheduling for High-Concurrency Geo-Distributed Inference over IP-over-WDM Networks

Yujie Han[1], Yang Wen[2], Xin Li[1*], Tong Lin[2], Xiaofang Gao[2], Zhidong Wu[2], Yongli Zhao[1]

1.Beijing University of Posts and Telecommunications, China; 2.State Grid Information & Telecommunication Center, China

In high-concurrency geo-distributed inference, stage placement and ready-stage ordering shape inter-stage traffic. TDIS dynamically incorporates expected grooming gain from current traffic and active-lightpath states to balance computation and communication overheads while improving active lightpath reuse.

ACP2026-0720-1

Multipath Scheduling for Geo-Distributed MoA in Computing Power Optical Transport Networks

Xiao Lin[1*], Haoyuan Zheng[1], Zuqi Teng[1], Ziang Feng[1], Weiling Lu[1], Enguo Chen[1*]

1.Fuzhou University, China

To resolve OTN bandwidth bottlenecks in geo-distributed MoA inference, we propose a SnCnF scheme. To manage scheduling complexity, our CNT-MSC method fuses neural topology pruning with exact optimization, significantly reducing computational overhead.

ACP2026-0729-3

A joint task offloading and resource allocationalgorithm for MEC systems interconnected bymetro optical networks

Jing Zhao[1], Yi Huang[2], Yuanmou Chen[1]

1.China Telecom Research Institute, China; 2.Beijing University of Posts and Telecommunications, China

Aiming at the joint optimization problem of task offloading and resource allocation in multi-server mobile edge computing(MEC) network, a solution based on an mixed integer nonlinear program(MINLP)and a novelheuristic algorithm are proposed, which can achievelow latencyand higher system benefits.

N2: Photonics for Data Center and Computing Systems

ACP2026-0506-2

LCOS-WSS-Based Optical Multicast for Collective Communication in AI Computing Center

Yixuan Wu[1], Fu Wang[1*], Qi Zhang[1], Haipeng Yao[2], Sitong Zhou[1], Xiangjun Xin[3], Shiyu Mo[1]

1.School of Electronic Engineering, Beijing University of Posts and Telecommunications, China; 2.School of Information and Communication Engineering, Beijing University of Posts and Telecommunications, China; 3.School of Information and Electronics Beijing Institute of Technology, China

This paper investigates LCOS-WSS-based collective communication for AI computing centers. Experimental results show multicast-enabled LCOS-WSS supports high-bandwidth, low-latency communication, while a hybrid phase-generation algorithm significantly reduces RMSE and inter-port crosstalk compared with conventional methods.

ACP2026-0604-3

Constructionand Performance Analysis of Peripheral Component Interconnect Express 6.0 High-Speed Transmission System

Yue Geng[1], Xuhui Liu[1*], ChunZhang Chen[1*], Liang Wang[1], Quan Pan[2], Hanming Wu[1]

1.Peng Cheng Laboratory, China; 2.Southern University of Science and Technology, China

High bandwidth and low-latency demands drive interconnect upgrades. This work builds a 64 GT/s per-lane ×16 PCIe 6.0 transmission system achieving up to 100% link utilization, with power-consumption characterization for next-gen data-center interconnection research.

ACP2026-0607-1

A Digital-Optical Co-Design Training Strategy for Robust Photonic Neural Networks

Jiayuan Guo[1], Wenjia Zhang[1], Zhimo Zhu[1], Zuyuan He[1]

1.Shanghai Jiao Tong University, China

We propose a digital-analog co-design framework incorporating various noise aware progressive 4-bit quantization training approaches to improve computation accuracy of photonic convolutional neural networks with Lightelligence PACE2 simulators.

ACP2026-0618-3

A Multi-Subcarrier-Based Optical Label Rewriting Scheme For AI Data Centers

Zexu Lu[1], Fu Wang[1*], Wenkui Guo[1], Deping Lin[2], Qi Zhang[1], Ce Shi[2], Xiangjun Xin[1]

1.Beijing University of Posts and Telecommunications, China; 2.Beijing Institute of Aerospace Microsystems and Information Technology, China

We demonstrate a multi-subcarrier optical label rewriting scheme for OCS-based AI data centers, enabling payload-continuous OAM information updating. Experiments verify FFT-based label recovery, low BER impact, and reduced cost and insertion loss than conventional schemes.

ACP2026-0628-1

A Residual-Driven Hierarchical Hybrid Readout for VCSEL-Based Photonic Reservoir Computing

Ling Zheng[1,2], Sichen Wen[1], Siyu Chen[1], Xingxing Guo[2], Yahui Zhang[2], Shuiying Xiang[2*]

1.Xi'an University of Posts and Telecommunications, China; 2.Xidian University, China

Reservoir computing has attracted considerable interest for complex temporal signal processing because of its training efficiency and low hardware overhead. However, traditional optical RC architectures that rely on linear readouts often fail to fully capture the high-order nonlinear features embedded in the physical reservoir, leading to limited accuracy when handling challenging signals such as laser-generated chaotic sequences. To overcome this limitation, we propose a novel residual-driven hierarchical hybrid readout based on a spin-polarized vertical-cavity surface-emitting laser. The core innovation is a "refined fitting and robust correction" mechanism: the first stage employs a random forest model, leveraging its strong nonlinear decision-making ability to learn complex evolutionary patterns directly from the high-dimensional reservoir states; the second stage applies a ridge regression to perform global smoothing and bias correction on the structured residuals from the first-stage prediction. To mitigate overfitting caused by the high multicollinearity of reservoir states, a dedicated optimization strategy combining feature subsampling for the random forest.Experimental results demonstrate that the proposed "RF + Ridge" hierarchical hybrid architecture achieves state-of-the-art performance across both benchmark scientific tasks and practical engineering scenarios.

ACP2026-0628-2

Feature-Adaptive Modulation Enhanced Time-Delay Reservoir Computing for Network Traffic Prediction

Ling Zheng[1,2], Song Wu[1], Siyu Chen[1], Xingxing Guo[2], Yahui Zhang[2], Shuiying Xiang[2*]

1.Xi'an University of Posts and Telecommunications, China; 2.Xidian University, China

To address the constraint in existing VCSEL based TD-RC mask designs, where injection amplitudes of multidimensional input features are independent of frequency domain information content, limiting prediction accuracy, a feature-adaptive modulation for TD-RC (FAM-TD-RC) was proposed. Spectral entropy was introduced into mask design as an unsupervised feature importance metric to adaptively calculate differentiated injection amplitudes, whereby features rich in frequency-domain information induced stronger phase modulation, while features with limited frequency-domain information were proportionally suppressed. The performance of FAM-TD-RC was validated using two-level, six-level, and random masks on two datasets from different institutions in CESNET-TimeSeries24 real backbone traffic, and the effects of model parameters on prediction performance were investigated. Compared with TD-RC, the MAPE of FAM-TD-RC for the two datasets decreased by 25%–45% and 34%–56%, respectively, offering an efficient photonic computing solution for multi-feature traffic prediction.

ACP2026-0630-73

A Reconfigurable Photonic Processor Descrambling Multicore Fiber SDM with Flexible Optical Routing

Xueyi Jiang[1,2], Ying Zhu[1,2,3], Yifan Liu[1], Xinyu Yang[1], Yuhan Gong[4], Chao Yang[4], Shuang Zheng[5], Hongguang Zhang[1], Daigao Chen[1], Xi Xiao[1,3*]

1.National Optoelectronics Innovation Center, China; 2.Optics valley laboratory, China; 3.Peng Cheng Laboratory, China; 4.State Key Laboratory of Optical Communication Technologies and Networks China Information and Communication Technologies Group Corporation, China; 5.Huazhong University of Science and Technology, China

We demonstrate a photonic processor for MCF interconnects, enabling joint MIMO channel descrambling and reconfigurable spatial routing. It achieves 13dB BER suppression, and 4×4 programmable connectivity for ultra-low-energy and low-latency AI clusters.

ACP2026-0630-89

Robust optical adder based on spatial-encoded diffractive deep neural networks

Xiaoxiao Ma[1,2,3], Junjie Chen[1,2,3], Kangrui Wang[1,2,3], Jinfeng Liu[1,2,3], Zhenyu Wan[1,2,3], Jian Wang[1,2,3*]

1.Huazhong University of Science and Technology, China; 2.Hubei Optical Fundamental Research Center, China; 3.Optics Valley Laboratory, China

We propose and demonstrate a diffractive optical adder based on spatial feature encoding, realizing all-optical addition. We verify its computational performance and stability under complex environments such as random phase distortion through simulation and experiments.

ACP2026-0630-99

Nanosecond-Scale Crystal-Switch-Based 100 Gb/s Fast Optical Switching for Data Center Networks

Qin Bai[1,2], Xiongxin Fu[2], Chunlai Cui[2], Xing Fu[2], Zichen Liu[2], Fulong Yan[1,2]

1.Beijing University of Posts and Telecommunications, China; 2.Pengcheng Laboratory, China

We propose a 100 Gb/s fast optical switching system using nanosecond-response crystal optical switches, which enables nanosecond-level coordinated control and achieves a link recovery time of less than 3 μs.

ACP2026-0701-189

A Flow Continuity-Aware Dynamic Scheduling Mechanism for Optical Switching Networks

Qingna Shi[1], Shan Yin[1*], Haocheng Feng[1], Zixin He[1], Mengru Cai[1], Xiaodong Liu[1], Yian Li[1], Shanguo Huang[1]

1.Beijing University of Posts and Telecommunications, China

We propose an intelligent optical switching scheduling mechanism based on Group Relative Policy Optimization, which achieves 88.35% throughput and maintains 73.35% flow continuity under full traffic load, substantially outperforming traditional algorithms.

ACP2026-0714-24

Beyond Mattis Decompositions: Direct Optical Hamiltonian Learning for Programmable Spatial Photonic Ising Machines

Maryam Dehbashizadeh Chehreghan[1], Ripalta Stabile[1]

1.TUE, Netherlands

We propose optical Hamiltonian learning for spatial photonic Ising machines. Rather than using Mattis decompositions, the system learns energy landscapes from spin configurations. On simulated 64-spin MaxCut, it preserves low-energy states and provides gradients that drive true-energy descent.

ACP2026-0714-27

FLOPS-DCN: A Fault-Aware Scalable Optical Packet Switching Architecture for Large-Scale Data Center Networks

Wenkui Guo[1], Fu Wang[1*], Qi Zhang[1], Feng Tian[1], Qinghua Tian[1], Xiangjun Xin[2]

1.Beijing University of Posts and Telecommunications, China; 2.Beijing Institute of Technology, China

This paper proposes FLOPS-DCN, a scalable optical packet switching architecture for large-scale data center optical interconnection. By introducing micro-amplitude pilot tone optical labels, the proposed architecture enables real-time link-state monitoring and rapid fault-aware control.

N3: Optical Network Architectures, Control and Management

ACP2026-0620-1
A Beam-Splitting-Assisted Hot-Standby Link Switching Method for LCOS-Based Wavelength Selective Switches
Shiyu Mo[1], Fu Wang[1*], Deping Lin[2], Qi Zhang[1], Ce Shi[2], Xiangjun Xin[3]
1.Beijing University of Posts and Telecommunications, China; 2.Beijing Institute of Aerospace Microsystems and Information Technology, China; 3.Beijing Institute of Technology, China
This paper presents a hybrid GS-ACO phase-hologram optimization method for LCOS-based wavelength selective switches, enabling programmable beam splitting for hot-standby link switching while effectively reducing output-intensity RMSE or port crosstalk under different weighted optimization objectives.

ACP2026-0629-20
Autonomous High Reliable Service Planning and Provisioning in Elastic Optical Network Based on Multi-Agent Collaboration
Haibin Huang[1], Yang Zhao[1], Mingqing Zuo[1], Dechao Zhang[1], Jin Wang[2], Yongsheng Xu[2], Yvan Pointurier[3], Reda Ayassi[3], Han Li[1], Dong Wang[1*]
1.Department of Fundamental Network Technology, China Mobile Research Institute, China; 2.Optical Product Line, Huawei Technologies Co., Ltd., China; 3.Huawei Technologies France, France
We propose a multi-agent collaborative mechanism for autonomous service provisioning in EON. Experimental results demonstrate that the multi-agent-based controller enables autonomous tool invocation and efficient service configuration for high-reliability services in complex scenarios within 4 minutes.

ACP2026-0629-34
FF-OTS: Fine-grained Fast Optical Timeslot Switching for Accelerating Mixture-of-Experts Training in LLM
Yun Teng[1], Hui Yang[1*], Qiuyan Yao[1], Zhihao Wu[1], Zhao Li[1], Jie Zhang[1]
1.Beijing University of Posts and Telecommunications, China
We present FF-OTS, a fine-grained fast optical timeslot switching control plane for accelerating Mixture-of-Experts training. FF-OTS combines dynamic packet-to-timeslot mapping with precise synchronization, achieving 711.14 ns switching latency and a bit error rate below 8.97×10^{-9}.

ACP2026-0630-46
Temporal-Aware Protection Selection and Capacity Planning for SLA-Differentiated Optical Transport Networks
Xinyi Zhou[1,2*], Kai Lv[1,2], Xiaotian Jiang[1,2], Qian Zhang[1,2], Yueqiu Mu[1,2], Anxu Zhang[1,2]
1.China Telecom Research Institute, China; 2.State Key Laboratory of Optical Fiber and Cable Manufacture Technology, China
TF-GAT enables availability-driven protection and capacity planning in SLA-differentiated optical transport networks by combining time-mean link states, transition-count fingerprints, and sparse graph attention, achieving 94.7% strategy accuracy and eightfold lower latency in extensive backbone simulations.

ACP2026-0701-14
Spatio-Temporal Wireless-Optical Planning for Multi-UAV Networks
Jialong Li[1*], Binglei Wang[1], Huiru Ao[1], Fan Yang[1], Zhenjie Zhou[1], Zhonghua Peng[1], Heng Xu[1]
1.Shenzhen University of Advanced Technolo, China
We propose STWO, a spatio-temporal wireless-optical planner for multi-UAV networks. It jointly considers flight distance, wireless quality, and backhaul load, reducing optical congestion while maintaining reliable communication in dense urban low-altitude environments.

ACP2026-0701-17
ACCO: Adaptive Communication-Computing Co-Optimization Expert-Routing Algorithm for Mixture of Expert (MoE) Inference in Data Centers
Jinxiang Lin[1], Gangxiang Shen[1*]
1.Soochow University, China
We propose an adaptive communication-computing co-optimization (ACCO) expert-routing algorithm for Mixture of Experts (MoE) inference, which jointly optimizes gating preferences, available bandwidth, and expert load in datacenter networks. Simulation results demonstrate that ACCO achieves lower inference completion time and tail latency while maintaining high routing consistency compared with conventional Top-K routing across various data center network topologies.

ACP2026-0701-190
GNN Enabled Communicative MARL for Joint Computing and Network Scheduling in Intelligent Computing Optical Networks
Zongxun He[1], Xiaodong Liu[1], Mengru Cai[1], Yian Li[1], Yuchen Liu[1], Shan Yin[1*]
1.Beijing University of Posts and Telecommunications, China
This paper proposes a GNN enabled communicative hierarchical multi-agent reinforcement learning algorithm, namely GCH-MARL, for joint scheduling in intelligent computing optical networks. By integrating GNN based state encoding, multi-agent communication, and hierarchical decision-making, GCH-MARL jointly schedules computing and network resources, thereby improving the service success rate and reducing latency under concurrent delay-constrained requests.

ACP2026-0701-198

CausalKG-ReAct: Temporal Causal Graph Attention with Interactive Reasoning for DWDM Optical Network Fault Diagnosis

Peng Zhang[1], Hui Li[1*], Xinyang Li[2], Rentao Gu[2]

1.Beijing University of Posts and Telecommunications (BUPT), China; 2.State Key Laboratory of Information Photonics and Optical Communications Beijing University of Posts and Telecommunications (BUPT), China

We present CausalKG-ReAct, a framework forDWDM optical network fault diagnosis that integrates a causallyverified knowl-edge graph with a ReAct agent for interactive,auditable reasoning. Evaluated on fault events collected fromreal DWDM networks, CausalKG-ReAct achieves 92.1% fault-type and 90.3% device-level localization accuracy under stratified5-fold cross-validation, surpassing GraphRAG by 3.8 and 9.9 percentage points respectively with statistical significance (p 0.001,McNemar).

ACP2026-0701-87

Reliable QoT Estimation for Imbalanced Data from Deployed Optical Networks Using MDN-ResKAN

Shaowen Xiang[1], Qizhi Qiu[1], Yihao Zhang[1], Siyuan Wu[1], Ruidong Liu[1], Weisheng Hu[1], Qunbi Zhuge[1*]

1.State Key Laboratory of Photonics and Communications, School of Information Science and Electronic Engineering, Shanghai Jiao Tong University, China

This paper proposes MDN-ResKAN to model Q-factor distributions for reliable QoT estimation under imbalanced deployed-network data. It reduces nominal RMSE by 32.5% and achieves 97% anomaly recall on a field-deployed WDM testbed.

ACP2026-0702-2

Joint Data-Key Path Provisioning for Physical-Layer Encryption in Optical Networks

Tianhe Liu[1], Wei Wang[1], Yajie Li[1], Yongli Zhao[1], Jie Zhang[1*]

1.Beijing Univ. of Posts & Telecom., China

We study joint DP-RP provisioning for physical-layer-encrypted services and design the SF and CF schemes. Simulations show SF has zero exposure but 22.87% blocking, while CF cuts blocking to 4.82%, exposure near 29.

ACP2026-0714-8

Connectedness-Aware Routing in Optical Satellite Networks with Hybrid 10/100 Gbps Laser ISLs

Lihan Zhao[1], Yongli Zhao[1*], Wei Wang[1], Yansong Fu[1], Zijian Cui[1], Jie Zhang[1]

1.Beijing University of Posts and Telecommunications, China

With the development of transmission technology in optical satellite networks (OSNs), future OSNs are expected to enter a stage featuring the coexistence of 10 and 100 Gbps laser inter-satellite links (LISLs). This paper proposes a connectedness-aware routing algorithm (CARA) in hybrid 10/100 Gbps OSNs. The proposed algorithm reduces excessive occupation of scarce 10 Gbps LISLs and enhances the connectedness of OSNs by selecting the one with the minimum 10 Gbps LISL consumption cost among candidate paths. Simulation results show that the proposed algorithm reduces blocking probability by 19.36% and average latency by 5.47% compared with the Dijkstra algorithm and the maximum bandwidth routing (MBR) algorithm, respectively.

ACP2026-0715-102

HOPP: Heterogeneous-GPU Pipeline Partitioning for Distributed LLM Inference over Datacenter Optical Transport Networks

Xingde Li[1], Jiawei Zhang[1*], Jun Dai[1], Chengyuan Zhang[1], Xiaorun Wang[1], Jun Luo[2], Zhicheng Ye[2], Hongchen Yu[2], Xin Liu[2], Yang Yu[2], Zhiqun Gu[1], Yuefeng Ji[1*]

1.Beijing University of Posts and Telecommunication, China; 2.Huawei Technologies Co., Ltd., China

HOPP integrates DC-OTN transmission characteristics, heterogeneous GPU computation properties, and microbatch-based pipe-line execution into candidate partition evaluation, enabling exposed communication time and pipeline idle time to be estimated under different Transformer-block partitions.

ACP2026-0715-137

Explicit Modeling of Multiple Optical Components for Highly Generalizable QoT Prediction

Shaopeng Li[1,2], Zhiqun Gu[1,2*], Xin Qin[3,4], Wei Chen[1,2], Jiahui Xu[1,2], Yuefeng Ji[1,2*], Meng Chen[5,6], Huidi Peng[5,6]

1.State Key Lab of Information Photonics and Optical Communications., China; 2.Beijing University of Posts and Telecommunications., China; 3.State Key Laboratory of Optical Fiber and Cable Manufacture Technology., China; 4.China Telecom Research Institute., China; 5.China Telecom Co. Ltd., China; 6.Research Institute China Telecom Intelligent Network Technology Co.Ltd., China

We propose MDLS-QoT, which explicitly models multi-component optical-link structures for generalized QoT prediction across op-tical-link scenarios. Experiments show that, with 10-shot residual adaptation, average MAEs for power and OSNR decrease to 0.235 and 0.222 dB

ACP2026-0715-147

AdaSync: An Adaptive Disturbance-Resilient Time-Frequency Synchronization Mechanism for All-Optical Metropolitan Spine-Leaf Networks

Xiaobo Du[1,2], Yuanhang Shi[1,2], Yunan Chen[1,2], Jie Sheng[1,2], Jiawei Zhang[1,2*]

1.State Key Lab of Information Photonics and Optical Communications, China; 2.Beijing University of Posts and Telecommunications, China

We propose AdaSync, an adaptive disturbance-resilient time-frequency synchronization scheme for all-optical Metropolitan Spine-Leaf Networks (MSLN). To counter complex link disturbances, AdaSync dynamically updates Kalman filter parameters within a three-state model. It employs a digitally controlled oscillator (DCO) for continuous joint servo control to eliminate discrete synchronization jitter, and introduces concurrent information broadcasting at leaf nodes. Experimental results show that AdaSync achieves sub-6 ns inter-gateway accuracy, a 64% stability improvement, and a 15.4% latency reduction, validating its high precision, efficiency, and scalability for next-generation optical networks.

ACP2026-0715-183

Selective Network Equipment Upgrading and Carbon-efficient Traffic Grooming in Optical Networks

Yanran Xiao[1], Wei Wang[1], Kexin Gao[1], Yibo Wang[1], Hece Han[2], Yajie Li[1], Yongli Zhao[1], Jie Zhang[1*]

1.Beijing University of Posts and Telecommunications, China; 2.Beijing Information Science and Technology University, China

We propose TCU-CAG, a traffic-aware equipment-upgrade and carbon-aware grooming framework for distributed AI networks. On a 52-site topology, it reduces carbon emissions by 22.6%-27.8% with acceptable blocking.

ACP2026-0715-198

DAFSync: Delay-Aware Feedback Scheduling for Precise Time Synchronization in All-Optical Metro Spine-Leaf Networks

Yuanhang Shi[1,2], Jiawei Zhang[1,2*], Huitao Zhou[1,2], Zhiqun Gu[1,2], Bojun Zhang[1,2], Yuefeng Ji[1,2*]

1.Beijing University of Posts and Telecommunications, China; 2.State Key Lab of Information Photonics and Optical Communications, China

We propose DAFSync, a delay-aware feedback scheduling scheme for precise time synchronization in all-optical metro spine-leaf networks. DAFSync combines leaf-side link delay compensation (LDC), feedback scheduling unit (FSU) construction, and gateway-side release scheduling. The schedule arranges group-level feedback in consecutive leaf reception slots, while each gateway retains its individual timestamps for four-timestamp clock-offset estimation. In the field-programmable gate array (FPGA) comparison, jointly enabling FSU aggregation and the assigned waiting times yields a residual-offset mean absolute error (MAE) of 5.62 ns, compared with 7.90 ns when both are disabled. In the evaluated 48-gateway simulation, the MAE is 4.36 ns for DAFSync and 6.46 ns for the reimplemented FASync baseline.

ACP2026-0716-1

Velocity-based Laser Linking in LEO Constellations with Non-uniform Altitude Orbital Planes

Junhao Hu[1], Yongli Zhao[1*], Yi An[1], Wei Wang[1], Mingkui Sun[1], Jie Zhang[1]

1.Beijing University of Posts and Telecommunications, China

Partial deorbiting creates HIGH and LOW layers with different orbital velocities, causing frequent cross-layer reconfiguration.LASB selects persistent bridges using predicted LOS angular rate, reducing reconfigurations by 60.4–84.8% while keeping throughput and blocking differences small.

ACP2026-0720-2

Load Forecasting and Collaborative Scheduling for Token and KV-cache Flows in Elastic Optical IoA

Xiao Lin[1*], Zuqi Teng[1], Haoyuan Zheng[1], Ziang Feng[1], Weiling Lu[1], Enguo Chen[1*]

1.Fuzhou University, China

Resource contention between latency-critical token and bandwidth-intensive KV-cache flows, exacerbated by dynamic traffic tides and bursts, challenges the Elastic Optical Internet of Agents. We propose a dual-timescale load forecasting and collaborative scheduling scheme. Macroscopically, an attention-based forecaster and recurrent reinforcement learning (RL) solver establish proactive capacity boundaries. Microscopically, a graph-aware RL scheduler executes fine-grained per-flow dispatching. Supported by a fault-tolerance safety net of token preemption and source-side VRAM residency, simulations confirm this closed-loop architecture seamlessly absorbs prediction deviations, maximizing resilience and system utility.

ACP2026-0727-1

Joint Optical-Computing Orchestration Based on Cross-Domain Cost-Efficiency for LLM Training

Zheng Han[1], Wei Wang[1], Yibo Wang[1], Yanlei Zheng[2], Yanxia Tan[2], Yongli Zhao[1], Jie Zhang[1]

1.Beijing University of Posts and Telecommunications, China; 2.China Unicom & Network Technology Research Institute, China

FC-CEM jointly selects DCs and wavelengths for cross-DC LLM training, trading compute gains, latency, and optical cost. NSFNET tests show lower blocking and wavelength-hop use than prior schemes across diverse traffic loads in all cases.

N4: Optical Access and Last-Mile Networks

ACP2026-0630-56

Intelligent Interconnection Bus for Optical Access Networks: Enabling Edge-Device Computing Collaboration

Tian Tang[1*], Ming Jiang[1], Ziyao Yang[1], Ddezhi Zhang[2]

1.Research Institute of China Telecom Corporation Limited, China; 2.China Telecom Corp Ltd, Beijing Res Inst, China

OAN lacks integrating and controlling computing-power. This paper proposes an intelligent interconnection bus to unify network and computing-power, enabling edge-device computing collaboration. Experiments validate improved inference efficiency, computing resource scheduling stability, multi-node collaborations, deterministic guarantees.

ACP2026-0630-75

Two-Timescale Reinforcement-Inspired Dynamic Bandwidth Allocation for Coordinated-Time Services in Higher-Speed PONs

Xiao Zhang[1], Qinghua Tian[1*], Yongjun Wang[1], Fu Wang[1], Feng Tian[1], Xiangjun Xin[2]

1.Beijing University of Posts and Telecommunications, China; 2.Beijing Institute of Technology, China

This paper proposes a two-timescale reinforcement-inspired dynamic bandwidth allocation (TRI-DBA) algorithm for coordinated-time services in higher-speed PONs. At an offered load of 0.9, TRI-DBA improves the CT satisfaction ratio by 150.5% over fixed-parameter queue-level DBA.

ACP2026-0701-79

Research and Verification of PON Deterministic Transmission Technology for Industrial Long Distance Closed-Loop Control

Yi Weng[1*]

1.China Telecom, China

PON meets remote industrial closed-loop control needs. We model, optimize latency scheduling, achieving closed-loop control over 20km fiber.

ACP2026-0707-2

Real-Time User Traffic Detection for Energy-Saving Control in Fiber-to-the-Room Networks

Jinhan Cai[1], Shun Zhao[1], Houfei Xiao[2], Xiaolong Zhang[2], Xiang Wang[2], Gangxiang Shen[1*]

1.Soochow University, China; 2.Huawei Technologies Co., Ltd., China

We propose a real-time user traffic detection method for Fiber-to-the-Room (FTTR) energy saving. By analyzing Wi-Fi medium access control (MAC)-layer metadata, the main fiber unit (MFU) detects user traffic and dynamically controls device power states. Experiments on a commercial prototype demonstrate 93.9% detection accuracy with 108-ms latency, achieving 26.4% energy savings.

ACP2026-0713-11

Experimental Demonstration of a Low-Jitter Industrial PON Using Slot-Oriented Deterministic Bandwidth Allocation and Time-Aware Shaping

Kyeong Hwan Doo[1*], Kwang OK Kim[1], Hwan Seok Chung[1]

1.Electronics and Telecommunications Research Institute, Korea

We experimentally demonstrate upstream jitter compensation based on slot-oriented DBA and TAS to achieve sub-microsecond jitter for industrial PON systems. Upstream jitter of less than 1 μs was achieved for four periodic industrial flows using a 50G/25G PON prototype.

ACP2026-0715-193

Two-Stage LSTM-BiGRU for Attack Detection and Localization in Passive Optical Networks

Hussain Shah Syed Bukhari[1], Jie Zhang[1*], Wei Wang[1], Yajie Li[1], Shahbaz Khan[1], Asif Ali Wagan[1]

1.Beijing Univeristy of Post and Telecommunications, China

Passive optical networks (PONs) carry high-speed traffic for residential, enterprise, and industrial users, and their shared branching topology leaves them open to physical-layer attacks: fiber eavesdropping, bending, and cutting. An operator watching a live PON often cannot tell whether a trace anomaly is a routine fault or an attack, nor which branch it sits on, using only the OLT power and SNR readings. This paper builds a four- branch PON topology from a public OTDR dataset and tests a two-stage LSTM-BiGRU pipeline against that problem. Detection and localization train as separate models, each with its own loss, so the two tasks do not compete over shared gradients. The LSTM detects an attack at 97.25% accuracy on held-out data. The BiGRU then classifies the attack type at 97.14% accuracy and maps it to an ONU branch, with a mean distance error of 37.8 m. Both models beat four classical baselines, with the BiGRU leading on localization by 2.48 points

ACP2026-0715-205

Real-Time FPGA Implementation of Frequency-Domain I/Q Skew Compensation and Timing Recovery for Coherent PON Downstream Reception

Renle Zheng[1], Yi Wei[2], An Yan[1], Penghao Luo[1], Yongzhu Hu[1], Xuyu Deng[1], Junhao Zhao[1], Nan Chi[1], Junwen Zhang[1*]

1.Fudan University, China; 2.Shanghai Aerospace Electronic Technology Institute, China

We propose a frequency-domain I/Q skew-compensation and 1.125-sps timing-recovery scheme, implement it in real time on an FPGA, and experimentally validate it for 100G coherent PON downstream reception, achieving a receiver sensitivity of −37 dBm at a BER of 2×10^{-2} after 40-km SSMF transmission.

Poster Session-T-Track

Content

T1: Short-Reach Transmission Systems for Data-Center, Access, and Mobile Networks

ACP2026-0626-20
Chaos-Enhanced End-to-End Constellation Shaping for Secure OTFS Based Data Centers
Xinshuai Liang[1*], Chongfu Zhang[1], Jiao Du[1], Yan Zheng[1], Yuchi Tian[1], Yue Lin[1]
1.University of Electronic Science and Technology of China, China
We propose a chaos-assisted end-to-end secure orthogonal time frequency space (OTFS) scheme to enhance performance and security of optical data-center interconnects. Its effectiveness is verified through secure transmission over 10km standard single-mode fiber.

ACP2026-0629-1
Impacts of Component Bandwidth and Sampling Constraints on 1.6 Tbit/s 240 Gbaud Coherent Single-Carrier Transmission
Adrian A. Juarez[1], Yanjun Zhu[2], Xin Chen[1*], Mingjun Li[1]
1.Corning Incorporated, United States Minor Outlying Islands; 2.Infraeo Inc., United States Minor Outlying Islands
Bandwidth-limited components and reduced ADC sampling are numerically studied for 1.6 Tbit/s single-carrier coherent transmission. Simulations show a receiver sensitivity near −19 dBm at 2×10^{-2} BER level with less than 1 dB penalty.

ACP2026-0630-14
225-Gbit/s IM/DD Mobile Fronthaul over 10-km SSMF Using Sub-Band Multiplexed Circular 8-QAM and 7-tap FFE
Shupeng Li[1], Chao Li[1*], Yunhong Liu[1], Yuru Tang[1], Shen Li[1], Ji Wang[1], Zhongshuai Feng[1], Zhixue He[1]
1.Pengcheng Laboratory, China
We demonstrate a 5-sub-band multiplexed IM/DD mobile fronthaul system using circular 8-QAM at 15 GBaud per sub-band, achieving 225 Gbit/s aggregate over 10-km Oband SSMF. All sub-bands achieve BER below the 7% HD-FEC threshold with only 7-tap linear FFE.

ACP2026-0630-5
LDPC-assisted BCJR equalization for Bandwidth-efficiency PAM4 Optical Interconnection
Shaonan Liu[1], Dong Ze[1*], Ming Jun[1], Yujia Mu[1], Hailian He[1], Xuanwei Liu[1]
1.Beijing Institute of Technology, China
We propose an LDPC-assisted decision-directed LMS and BCJR in a 200 Gb/s PAM4 system. By employing feedback loops to optimize the iterative decoding-equalization process, which achieves over 3 dB receiver sensitivity improvement compared with conventional methods.

ACP2026-0630-66
Record 200-Gbps PAM6 Transmission over 200-m MMF Enabled by an 850-nm Single-Mode Multiaperture VCSEL
Chen Cheng[1, 2]
1.The Hong Kong Polytechnic University, Hong Kong, China; 2.Huazhong University of Science and Technology, China
We report record 200-Gbps PAM6 transmission over 200 m OM4 MMF using an 850-nm single-mode VCSEL, achieving two-fold reach improvement over state of the art, highlighting SM-VCSEL potential for high-speed extended-reach optical interconnect scaling applications.

ACP2026-0701-116
Optical Multipath Interference Mitigation in PAM-4 IM/DD System via Enhanced Decision Thresholding
Xinping Wang[1, 2, 3], H. N. Parajuli[1, 2], Tonghui Ji[1, 2], Ning Deng[1, 2*], Jian Zhao[4], Chunfu Wu[5]
1.School of Computing and Information Technology, Great Bay University, China; 2.Dongguan Key Laboratory for Intelligence and Information Technology, China; 3.Department of EEE, Southern University of Science and Technology, China; 4.School of Electronic and Information Engineering, South China University of Technology, China; 5.Luxshare-Tech, China
We propose an effective and low-complexity thresholding technique based on symbol-wise exponential averaging, which tracks and mitigates MPI-induced fluctuation in the received signal. Experiment in a 56 Gbit/s PAM-4 IM/DD system demonstrates enhanced performance.

ACP2026-0701-88
A Memory-Assimilation-Accommodation Semi-Supervised DNN Equalizer for 256 Gbps Data Center Interconnects
Zhang Luo[1], Zedi Zhang[1], Xi Xiao[2], Zheng Peng[1], Zhicheng Wang[1], Jiayue Wang[1], Zhenxing Sun[1], Mingche Lai[1*]
1.National University of Defense Technology, China; 2.National Information Optoelectronics Innovation Center, China
We propose a memory-assimilation-accommodation semi-supervised DNN equalizer for 256 Gbps PAM4 data center interconnects, which reduces the labeled data requirement by 68.2% compared with the fully supervised approach.

ACP2026-0702-6

T-Spaced versus Oversampled Digital Transmitters: A Power-Budget Study for Unamplified Coherent Lite Links

Wing Chau Ng[1], Scott Yam[2], Can Zhao[3], Bin Chen[3]

1.Carleton University, Canada; 2.Queen's University, Canada; 3.Hefei University of Technology, China

We compare T-spaced and oversampled transmitters for coherent-lite systems, assuming 8 dB link loss and realistic RF losses with state-of-the-art TFLN modulators. Lower PAPR in T-spaced designs reduces modulation loss by up to 3.5 dB, improves received SNR, and enables reliable unamplified-link closure.

ACP2026-0714-37

Net 640-Gb/s Coherent Transmission over 3.2-km Double Nested Anti-resonant Nodeless Hollow- core Fibre without Compensation of Chromatic Dispersion and Polarization Mode Dispersion

Shouchuan Ma[1,2], Qibing Wang[1], Wei Ding[3], Xu Zhang[1], Honglin Ji[1], Jingbin Feng[1], Xingfeng Li[1], Ming Jiang[1], Yeping Lai[1], Chao Li[1], Hui Chen[1], Ke Li[1], Lei Wang[1], Zhixue He[1]

1.Pengcheng Laboratory, China; 2.Shenzhen International Graduate School, Tsinghua University, China; 3.College of Physics & Optoelectronic Engineering, Jinan University Guangzhou, China, China

We demonstrate a hardware-efficient coherent transmission over a 3.2-km DNANF with an ultra-low CD of 1.125 ps/nm/km at 1550 nm. Compared with OB2B, the transmission penalty is negligible for both 64-GBaud 16-QAM and 64-QAM signals.

ACP2026-0714-50

Low-Complexity Carrier Phase Recovery Using a BPS-Seeded DDPLL Bank for Framed Coherent 16QAM Transmission

Yifan Wang[1], Mingyang Guo[1], Pengfei He[1], Yanlu Huang[1], Liyan Wu[1], Yanni Ou[1*], Kun Xu[1]

1.Beijing University of Posts and Telecommunications, China

A low-complexity BPS-seeded DDPLL-bank carrier phase recovery scheme is proposed for framed coherent 16QAM, achieving approximately 18% of BPS64 complexity with only 0.13-dB ROP penalty in 20-Gbaud, 20-km experiments.

ACP2026-0715-169

Latency-Optimized Transmission of Tokenized Video Over Parallel HCF-SMF Links

Jiwei Xie[1], Weiqi Lu[1], Mingyuan Wang[1], Haojie Zhu[1], Dayu Shi[1], Yuhao Fang[1], Puzhen Yuan[1], Yu Yan[1], William Shieh[1*]

1.Westlake University, China

We demonstrate the first latency-optimized tokenized-video transmission over parallel HCF-SMF links. For the balanced profile, the initial-latent stream completes 2.45 μs earlier; three 50-GBaud PAM-4 profiles achieve 97.38%-98.36% correct token-ID rates and 28.50-32.57 dB PSNR.

ACP2026-0715-60

Demonstration of Optical Integrated Sensing, Communication, and Power Transfer System over Hollow-Core Fibers

Xiao Huang[1], Yuhan Gong[1], Pengfei Ma[2], Cheng Du[2], Ming Luo[1], Chao Yang[1*]

1.China Information and Communication Technologies Group Corporation, China; 2.Wuhan FiberHome International Technologies Co.,Ltd, China

An O-ISCPT system based on HCF was successfully demonstrated over the C-band. Experimental results reveal that the proposed architecture achieves higher bitrate transmission, superior sensing sensitivity and improved power transfer efficiency relative to SMF-based scheme.

ACP2026-0715-77

Baud-Rate Timing Error Detector Robust to Laser Phase Noise for Coherent-Lite Systems

Tianwai Bo[1*], Shiqi Liu[1], Jun Dong[1], Zhongwei Tan[1], Yi Dong[1]

1.Beijing Institute of Technology, China

We propose a novel baud-rate clock recovery algorithm for coherent-lite optical interconnect. By exploiting the differential phases of adjacent symbols, it exhibits enhanced tolerance to laser phase noise.

ACP2026-0728-2

Power Scaling of Silicon-Photonic Links from Retimed Pluggables to Co-Packaged Optics for 51.2-Tb/s Datacenter Switches

Dayu Shi[1], Puzhen Yuan[1], Weiqi Lu[1], Haojie Zhu[1], Yuhao Fang[1], William Shieh[1*]

1.Westlake University, China

We present an interface-aware energy model for 1.6-3.2-Tb/s silicon-photonic datacenter links. At 51.2 Tb/s, co-packaged optics lowers modeled communication power by 34.57% for IM/DD and 22.58% for coherent systems compared with conventional full-retimed pluggable implementations.

ACP2026-0729-2

Wafer-scale uniform SiN DWDM multiplexer based on Fabry-Perot cavity optical filters

Mingyu Zhu[1], Weihan Wang[1], Dajian Liu[1], Zhang Yijing[1], Yaochen Shi[1], Daoxin Dai[1]

1.Zhejiang University, China

We demonstrate wafer-scale SiN DWDM multiplexers using cascaded high-order 1×2 FP cavities. The devices achieve flat-top spectra, low crosstalk and weak thermal drift, with excellent uniformity on 8-inch wafers for scalable optical interconnects.

T2: Optical Transmission Systems

ACP2026-0610-1

Verify the Impact of the Cutoff Wavelength of G.654.EFiber on S-band Signal Transmission

Chuangye Wang[1*], Shikui Shen[1], He Zhang[1], Yu Tang[1], Wei Sun[2], Gan Luo[2], Zelin Wang[1], Guangquan Wang[1], Xiongyan Tang[1]

1.China Unicom Research Institute, China; 2.Jiangsu Alpha Optic-Electric Technology Co., Ltd., China

The MPI penalty of the S+C+L band multiple splice points transmission system was tested using four sets of G.654.E fiber with different cutoff wavelengths, demonstrating that cutoff wavelength has no effect on S-band signals transmission

ACP2026-0616-1

100.8Tbit/s Real-Time Transmission Over 300km Based on a Seven-Core Erbium-Doped Fiber Amplifier

Yi Chen[1], Qingyu He[1], Hongguang Sun[1], Cheng Du[2], Chengpeng Fu[3], Hanbing Li[1], Ming Luo[1], Wenhao Li[2], Shaokun Liu[2], Ying Qiu[1*]

1.State Key Laboratory of Optical Communication Technologies and Networks, China; 2.Ruiguang ICT Technology Co., LTD, China; 3.Accelink Technologies Co., Ltd, China

We demonstrate a 100.8-Tbit/s optical transmission over a distance exceeding 300 km of multicore fiber using a recirculating configuration. The bit-error-rates of all 36 WDM channels remain below the FEC threshold.

ACP2026-0626-2

Study on Capacity Evaluation of Subsea Open Cable System

Bangtian Xu[1*], Pengkui Chu[2], Yanpu Wang[1], Quanying Wen[1], Jiang Lin[1], Jianping Li[1]

1.HMN Technologies Co., LTD, China; 2.China Telecom Global Limited, China

In this paper, a method based on the Shannon's equation is proposed for evaluating the Potential capacity of subsea open cable system, and the accuracy of the method has been verified in various scenarios in the laboratory with an error of less than 3.3%

ACP2026-0629-5

Algorithm-Driven Design of Trench-Assisted Multi-Ring-Core Few-Mode Fiber for Weakly Coupled Mode-Division Multiplexing

Yingying Zhou[1,2], Junpeng Liang[1*], Xiuquan Cui[1], Cancan Chen[1], Gao Ye[1], Jianwei Tang[1], Zhongliang Sun[1], Linsheng Fan[1], Lingguo Cao[1], Zhaopeng Xu[1], Zhixue He[1], Jinlong Wei[1*]

1.Pengcheng Laboratory, China; 2.South China University of Technology, China

GA, PSO, and BO are numerically compared for 10-mode TAMRC-FMF design using a unified FEM framework. GA achieves the best single-run mode spacing, while PSO and BO show advantages in mean performance and stability, respectively.

ACP2026-0630-13

Nonlinear Phase Compensation for Coexistence of Multi-carrier Optical Transmission and Distributed Acoustic Sensing

Shutong Jiang[1], Zhiwei Liang[1], Yang Li[1], Jiwei Xu[1], Yi Lei[1], Xiang Li[2], Bin Chen[1*]

1.Hefei University of Technology, China; 2.China University of Geosciences, China

Optical communication, distributed acoustic sensing, digital subcarrier multiplexing, phase compensation

ACP2026-0630-17

Enhancing Physical-Layer Security in Optical Fiber Communications via Joint Chaotic Encryption and Dual-Polarization 4D Modulation

Yuchen Zhang[1,2], Yi Lei[2], Chuanyu Du[2], Ming Luo[3], Bin Chen[2*]

1.Wuhan Research Institute of Posts and Telecommunications, China; 2.Hefei University of Technology, China; 3.China Information and Communication Technology Group Co., Ltd., China

In this paper, a chaotic encryption scheme based on dynamic key generation from the instantaneously transmitted information is proposed by employing dual-polarization 4D modulation schemes. The impacts of four-dimensional and two-dimensional chaotic encryption on both security and transmission performance are analyzed, and the encryption performance under different modulation formats is systematically evaluated.

ACP2026-0630-36

Research on Nonlinear Coefficient of Highly Nonlinear Photonic Crystal Fibres at 1064 nm and in SCL Bands

Qiqiang Yang[1], Yaping Liu[1*], Liyan Zhang[1], Jingxiong Yu[1], Hui Zhang[1], Lei Shen[1], Zhaolong Liao[1], Weiguang Wang[1], Zheng Feng[1], Zhuang Xiong[1], Lixin Gu[1], Tiejun Wang[1]

1.State Key Laboratory of Optical Fibre and Cable Manufacture Technology Yangtze Optical Fibre and Cable Joint Stock Limited Company, China

We propose a method to reduce the measurement error of nonlinear coefficients and test the nonlinear coefficients of highly nonlinear photonic crystal fibres at 1064 nm and in SCL bands for the first time.

ACP2026-0630-43

Cascaded Filtering Scheme for Power Enhancement in Power-over-Fiber Transmission Systems

Yao Guo[1*], Tian Guo[2], Yang Zhao[2], Tong Zhai[1], Yuyao Wu[1], Zhiguo Zhang[1]

1.Beijing University of Posts and Telecommunications, China; 2.State Grid Beijing Electric Power Company, China

A cascaded filtering scheme is proposed for enhancing the power transmission capacity of power-over-fiber (PoF) systems. A 46-km PoF experimental link is constructed, achieving 2.45-fold and 2.25-fold increases in threshold power and maximum output power.

ACP2026-0630-45

Complex-Valued FFNO Based Equalization for Coherent Optical Communication Systems

Hong Yang[1], Anlin Yi[1*], Lianshan Yan[1]

1.Southwest Jiaotong University, China

A nonlinear impairment equalization method based on a complex-valued factorized Fourier neural operator (CVFFNO) is proposed. The proposed method extends the realvalued FFNO to a complex-valued architecture and incorporates a phase-rotation module to improve the representation of nonlinear impairments. The proposed method is validated in a 2400-km, 28-Gbaud polarization-division multiplexed 16-QAM (PDM-16QAM) simulated transmission system. Results show that, at the optimal launched power of 3 dBm, CVFFNO achieves performance comparable to digital back-propagation with 16 steps per span (DBP-16StPS), with only a 0.11-dB Q-factor gap, while reducing the execution time by 98.6%. Compared with DBP-10StPS with similar Q-factor performance, CVFFNO reduces the execution time by 98.0%. Furthermore, under comparable computational complexity, CVFFNO improves the Q factor by 1.15 dB over the real-valued FFNO, demonstrating its superior nonlinear equalization performance.

ACP2026-0630-59

Topology Modeling and Perturbation Propagation Analysis of Cross-Channel Gain Competition in WDM-EDFA Systems

Yiwei Zhao[1], Liqian Wang[1*], Kunfeng Liu[1]

1.Beijing University of Posts and Telecommunications, China

A competition-topology model based on local gain responses is proposed for WDM-EDFA systems, enabling perturbation propagation prediction, critical wavelength identification, and operating-point-dependent competition structure characterization.

ACP2026-0630-62

Inversion-Guided Design of Dual-Stage Erbium-Doped Fiber Remote Gain Units for Pump-Limited Unrepeated Optical Transmission

Yiwei Zhao[1], Liqian Wang[1*], Kunfeng Liu[1]

1.Beijing University of Posts and Telecommunications, China

An inversion-guided pump-bypass dual-stage EDF RGU is proposed for pump-limited unrepeated optical transmission. Combining Giles-based inversion analysis with cascaded OSNR evaluation identifies an optimal 10 m + 11 m configuration with an improved gain-noise tradeoff.

ACP2026-0630-69

Generalizable Wideband Fiber Channel Modelling using Physics-Guided Fourier-KAN Enhanced Neural Network

Zhen Xu[1], Hongcheng Wu[1], Yuji Wang[1], Ganggang Li[1], Faisal Khan[1*]

1.Tsinghua University, China

We propose a physics-guided Kolmogorov-Arnold network for generalizable wideband fiber channel modelling. Validated on 13-channel 1200-km WDM systems, our model delivers superior waveform fidelity and maintains ESNR prediction error within 0.2 dB.

ACP2026-0701-136

An Efficient Bit-Loading-Assisted Continuous-Spectrum Nonlinear Frequency Division Multiplexing System with Optimized Subcarrier Bit Allocation

Na Wu[1], Xinkuo Yu[1,2], Chenglin Bai[1,2*], Runyang Zhang[1], Hengying Xu[1,2*], Yining Zhang[1,2], Shijie Hou[1], Shuzhan Liu[1], Yaozheng Yue[1]

1.School of Physics Science and Information Engineering Liaocheng University, China; 2.Liaocheng Key Laboratory of Industrial-Internet Research and Application, China

Conventional CS-NFDM systems face a GI trade-off: insufficient GI causes ISI and degrades edge subcarriers, whereas excessive GI reduces SE. We propose BLA-NFDM to adaptively allocate bits per subcarrier. Simulations show 0.94 dB Q-factor and 0.6 bit/s/Hz SE gains over 800 km.

ACP2026-0701-219

Time-Reference-Assisted LSTM Feedforward Timing Compensation for Seven-Core Fiber Coherent Transmission

Jing Zhang[1,2], Feng Tian[1,2*], Chuanji Yan[1,2], Jianwei Zhou[1,2], Yawei Zheng[1,2], Hualei Shi[1,2]

1.State Key Laboratory of Information Photonics and Optical Communications, China; 2.Beijing University of Posts and Telecommunications, China

We experimentally demonstrate time-reference-assisted LSTM feedforward timing compensation in seven-core fiber transmission. A causal LSTM predicts 625-MHz timing drift, reducing synchronization search complexity and achieving up to 2.25dB receiver-sensitivity gain across six 10-GBaud 64QAM channels.

ACP2026-0701-223
Hybrid Angular-Symmetry Fiber for Topology-Selective Transmission of OAM Modes
Yanbang Zheng[1], Xiongfeng Rao[2], Li Yang[1*]
1.University of Science and Technology of China, China; 2.Guilin University of Electronic Technology, China
Xploiting the topological selection mechanismof angular symmetry, we propose a Hybrid Angular Symmetry Fiber for stable transmission of OAM modes across multiple topological charges.

ACP2026-0701-226
A Time-Domain Encryption Scheme Based on Real-Valued Chaotic Orthogonal Matrix Transform
Qiaoyan Yu[1], Menghao Liu[1], Han Gao[1], Li Pei[1], Jianshuai Wang[1], Zhouyi Hu[1*]
1.Beijing Jiaotong University, China
We propose and experimentally demonstrate a novel time-domain encryption scheme based on digital chaos for single-carrier formats. The results show that the proposed scheme can provide a large key space of 10623 against brute-force attacks.

ACP2026-0701-23
Low-Complexity Training Sequence Based I/Q Imbalance Compensation for Coherent Optical Systems
Tiantian Zhang[1*], Xiaoxue Gong[1], Wenling Xiao[1], Yuxin Xu[2], WeiGang Hou[1], Lei Guo[1]
1.Chongqing University of Posts and Telecommunications, China; 2.Zhejiang University of Technology, China
We propose a training-sequence-based localization and pilot-assisted I/Q imbalance compensation scheme for coherent optical systems, enabling low-complexity estimation and robust receiver performance in high-speed optical transmission.

ACP2026-0701-94
Prediction of Per-Channel Power, OSNR, and GSNR for Long-Haul Submarine Systems Based on a Cascaded CNN-Physical Framework
Yang Wang[1*], Shigui Zhang[1], Liping Ma[1], Jiang Lin[1], Bangtian Xu[1], Zhongyi Li[1], Yanpu Wang[1],Jiachao Xu[1],Jianping Li [1], Yan Wang[1], Lin Zhang[2]
1.HMN Technologies CO., LIMITED, China; 2.Tianjin University, China
We propose a temperature-compensated hybrid CNN-physical framework with one-shot calibration for submarine QoT prediction. A physics-data-driven formula extends the valid temperature range to 4–35 °C. The framework achieves average MAEs 0.22/0.22/0.27 dB for a 3000-km experimental system.

ACP2026-0712-2
DSCM Partitioning Guided by the Wideband/Narrowband Boundary Criterion Theory for All-Order PMD and Rapid RSOP Compensation
Yan Zhang[1], Xiaoguang Zhang[1], Nan Cui[1*]
1.Beijing University of Posts and Telecommunications, China
We propose a DSCM partitioning strategy guided by the wideband/narrowband boundary criterion theory, enabling compensation of 30 ps all-order PMD and 12 Mrad/s RSOP in 200 GBaud PDM-QPSK transmission at the 99.9% confidence level.

ACP2026-0714-18
Real-time 27.2 Tb/s (34×800 Gb/s) Unrepeatered Transmission over 57.5 dB in the C-band
Tong Li[1*], Liping Ma[1], Jiang Lin[1], Yanpu Wang[1], Quanying Wen[1], Bangtian Xu[1], Jianping Li[1]
1.HMN Technologies Co., LTD, China
We demonstrate a real-time 27.2 Tb/s (34×800 Gb/s) PCS-16QAM unrepeatered transmission with a record span loss of 57.5 dB in the C-band. The proposed system integrates of high-order Raman pump, backward ROPA, and low-loss, large effective mode area fiber.

ACP2026-0714-19
Deep photonic reservoir computing for fiber nonlinearity mitigation in long-haul optical fiber communication systems
Hansen Peng[1], Yu Zhang[1], Yaping Liu[1*], Zhiqun Yang[1], Zhanhua Huang[1], Lin Zhang[1*]
1.Tianjin University, China
A deep microring-resonator-based photonic reservoir computing network mitigates nonlinear distortion in long-haul QPSK transmission, achieving 5×10^{-4} BER over 3960 km, with tenfold improvement over FFE/VNLE and 75% lower BER than single-layer PRC while remaining robust.

ACP2026-0714-25
On the Accuracy of Split-Step Fourier Simulations and EGN Model for Coupled-Core Multicore Fiber Transmission Systems
Xu Zhu[1], Zhiwei Liang[1], Can Zhao[1], Yi Lei[1], Tianwai Bo[2], Bin Chen[1*]
1.Hefei University of Technology, China; 2.Beijing Institute of Technology, China
We investigate the numerical accuracy of the split-step Fourier method (SSFM) in strongly coupled multicore fiber (SC-MCF) transmission systems. Simulations of two-core and four-core SC-MCF systems indicate that accurate SSFM simulations require a smaller propagation step size than those typically reported for conventional single-mode fiber in previous studies. From this the accurate SSFM results are used as a reference to evaluate the consistency of the enhanced Gaussian noise (EGN) model, and excellent agreement is observed for both QPSK and 16QAM modulation formats.

ACP2026-0714-54

Experimental Demonstration of Optical Power and Data Co-transmission over G.654.E Fiber

Jie An[1], Yang Zhao[2], Tian Guo[2], Tong Zhai[1], Yao Guo[1], Zhiguo Zhang[1*]

1.Beijing University of Posts and Telecommunications, China; 2.Beijing Electric Power Company State Grid Corporation of China, China

We built a 1310/1550-nm WDM system for simultaneous optical power delivery and 6.25-Gbit/s data transmission over G.654.E fiber. Co-transmission experiments over 2, 5, 10, and 20 km links achieved received optical powers of 5.98, 2.67, 1.516, and 0.572 W, respectively. BER and eye-scan results verify the feasibility of long-distance power-and-data transmission and reveal the trade-off between delivered optical power and communication performance, providing an experimental reference for integrated fiber-based power and communication links.

ACP2026-0715-109

1.344 Eb/s·km C+L-Band SDM Transmission over 3314.4-km Weakly-Coupled Seven-Core Fibers

Xingfeng Li[1*], Shuchao Mi[1], Shangcheng Wang[1], Xu Zhang[1], Hui Chen[1], Yao Lu[1], Siyue Jin[1], Zhaopeng Xu[1], Shouchuan Ma[1,2], Ming Luo[1,3], Honglin Ji[1], Chao Li[1], Qibing Wang[1], Zichen Liu[1], Zhixue He[1], Shaohua Yu[1]

1.Pengcheng Laboratory, China; 2.Tsinghua University, China; 3.CICT, China

We demonstrate a 405.5 Tb/s broadband long-haul SDM-WDM transmission over 3314.4-km weakly-coupled seven-core fiber using only 2×2 MIMO equalization, as the highest reported capacity-distance-product in seven-core fiber transmission of 1.344 Eb/s·km.

ACP2026-0715-114

High-Sensitivity Multidimensional Modulation With Joint ML Reception for Photon-Starved Optical Links

Lingxiao Li[1], Shumin Cheng[1], Hao Zhang[1], Zhennan Zheng[1*], Xinlu Gao[1], Shanguo Huang[1]

1.Beijing University of Posts and Telecommunications, China

We propose a multidimensional signaling schemefor photon-starvedlinks. Employing a globally joint ML receiver, the 16PPM-16FSK-4PolSK-6PSK format achieves an OSNR of 9.18 dB at a 7% HD-FEC threshold andtransmission rate of 125 Gb/s.

ACP2026-0715-157

Physical Layer Encryption Based on Key-Controlled Cascaded Mode-Coupling Matrices for Few-Mode Fiber MDM Transmission

Xinge Liu[1], Xianfeng Tang[1*], Zeyu Xu[1], Zhihan Li[1], Xinran Zhu[1], Xiaoguang Zhang[1]

1.Beijing University of Posts and Telecommunications, China

We propose a physical-layer encryption scheme based on key-controlled cascaded mode-coupling matrices for few-mode fiber mode-division multiplexing (MDM) transmission systems.

ACP2026-0715-202

Co-transmission of over 100 W laser power and high-speed communication in a 5 km anti-resonant hollow-core fiber link

Jingwen Pei[1], Guosheng Lin[1], Zirong Pan[1], Yifan Zou[1], Di Xia[1], Nuoqi Yang[1], Liyang Luo[1], Ziou Zhao[1], Zhaohui Li[1], Bin Zhang[1*]

1.Guangdong Provincial Key Laboratory of Optoelectronic Information Processing Chips and Systems, China

We demonstrate a 5-km AR-HCF power-over-fiber link co-transmitting 111.1-W laser power and 400-Gbit/s DP-16QAM data at 1080/1550 nm, enabled by dual-band guidance and high-isolation filtering with low crosstalk.

ACP2026-0715-52

Hardware-Efficient Asymmetric IQ-MIMO Equalization for High Speed Coherent Systems

Xuecheng Ren[1], Shen Wang[1], Wenlong Xu[1], Jing Zhang[1], Bo Xu[1], Kun Qiu[1]

1.University of Electronic Science and Technology of China, China

We propose a hardware-efficient asymmetric equalizer for optical coherent transmission systems. By truncating cross-taps based on the short memory of IQ interference, we reduce multiplier complexity by 60% without performance penalty in 25-Gbaud QPSK experiments.

ACP2026-0715-90

A Multidimensional Parameter Design Method for Optical Fibers Enabling Efficient Broadband Four-Wave Mixing

Yu Yang[1], Keyuan Yang[1], Changjian Ke[1*], Qishang Xu[1], Qun Wang[1], Yun Wang[1]

1.Huazhong University of Science and Technology, China

We propose an efficient fiber design methodology in multi-dimensional parameter space. A dispersion-stabilized fiber is optimized, achieving a four-wave mixing conversion efficiency greater than 0 dB and a conversion bandwidth exceeding 100 nm.

T3: Subsystems and Digital Signal Processing for Optical Communications

ACP2026-0618-2

Wavelet Neural Network Nonlinear Equalization with Generalized Cross-Validation-Based Adaptive Thresholding

Yawei Sun[1],Fei Wang[1*],Qi Xu[1],Mingrui Lin[1],Chenchen Wang[1],Huan Chang[1],Dong Guo[1], Sitong[2], ZhangQi Zhou[2],Wei Yan[1],Ran Gao[1],Xiangjun Xin[1]

1.Beijing Institute of Technology, China; 2.Beijing University of Posts and Telecommunications, China

We propose a GCV-WNN equalizer enabling adaptive nonlinear equalization for OAM-MDM, achieving 0.3dB sensitivity gain at 20% SD-FEC for |l|=2 OAM mode and 3.3dB at 7% HD-FEC for |l|=3 OAM mode over Volterra equalization.

ACP2026-0622-1

Demonstration of a pre-nonlinearity compensation system by digital back-propagation and spectrum-QAM transmitter

Saiyang Liu[1], Yitian Gong[1], Chi Zhang[1*]

1.Huazhong University of Science and Technology, China

We propose a fiber nonlinearity compensation scheme via digital back-propagation and spectrum-QAM transmitter. We experimentally recover 5-channel 40-Gbaud RZ-QPSK signals over 415-m HNLF and simulate Q^2 improvement on 400-kmSMF transmission in the C-band.

ACP2026-0623-9

Low Complexity Blind Phase Recovery Based on Phase Pre-Rotation and Threshold-Guided Search Skipping

Yuesheng Chen[1], Fei Wang[1*], Qi Xu[1], Mingrui Lin[1], Chenchen Wang[1], Huan Chang[1], Dong Guo[1], Sitong Zhou[2], Qi Zhang[2], Wei Yan[1], Ran Gao[1], Xiangjun Xin[1]

1.Beijing Institute of Technology, China; 2.Beijing University of Posts and Telecommunications, China

We propose a low complexity blind phase search (BPS) scheme using phase pre-rotation and threshold-guided search skipping for M-QAM coherent systems, achieving BER comparable to conventional BPS with substantially reduced computational complexity.

ACP2026-0629-28

Low-ComplexityPhysics-Aware Residual Adapters for Multi-Impairment Compensation and Accelerated On-Site Training in 200G PON

Qian Guo[1], Xue Xiao[1], Tao Yang[1], Min Zhang[2*]

1.Beijing University of Posts and Telecommunications, China; 2.Shenzhen Research Institute of Beijing University of Posts and Telecommunications, China

We propose an LCPARA equalizer for multi-impairment compensation, accelerated on-site training, and complexity reduction in 200 Gbps PON downlink transmission systems, which can achieve performance equivalent to that of individually self-training each ONU, while reducing training time by an average of 30.82% and total complexity by 40.42%.

ACP2026-0630-113

Block-Based PAM-4 Equalization Network with Oversampled Waveform Fusion for Digitized Radio-over-Fiber Systems

Shibo Yin[1], Jia Ye[1*], Jiongbin Deng[1], Yue Zhu[1], Qiyue Hu[1], Wei Pan[1], Lianshan Yan[1], Xihua Zou[1]

1.Southwest Jiaotong University, China

This paper proposes BPEN, a block-based neural equalizer for PAM-4 DRoF links, exploiting PCM physical blocks and oversampled waveform features to improve receiver-side decisions, with experimental validation over 15-km SSMF transmission.

ACP2026-0630-61

High-Speed PAM-4 and PAM-8 Signal Transmission Using Multi-Scale Parallel Convolution and Self-Attention Equalization

Kaijing Hu[1], Xinyu Chu[1], Wei Li[1*], Yujia Hu[1], Ming Luo[2], Liyan Huang[3]

1.Wuhan National Laboratory for Optoelectronics Huazhong University of Science and Technology, China; 2.The State Key Laboratory of Optical Communication Technologies and Networks China Information Communication Technologies Group Corporation, China; 3.Accelink Technologies Co., Ltd., China

We propose a neural network equalizer termed multi-scale parallel convolution with lightweight attention. By integrating multi-scale local feature extraction with global dependency modeling, MPC-LA compensates for ISI, while maintaining low parameter complexity.

ACP2026-0630-71

Decision-Residual Clock Recovery Based on THP-Extended Constellation for FTN Coherent Optical Systems

Jianfeng Han[1], Kangyue Shen[1], Jingpeng Liu[1], Menghong Xu[1], Mingming Zhang[1], Sheng Cui[1*], Ming Tang[1*]

1.Huazhong University of Science and Technology, China

We propose a decision-residual timing phase error detector leveraging the THP-extended constellation for short-haul coherent FTN systems with symbol-rate DSP. Numerical simulations over standard single-mode fiber links confirm that the proposed detector significantly outperforms the conventional 3Sign-TPED in both effective noise ratio and post-modulo BER. Moreover, it enables low-compression-factor FTN transmission and delivers a receiver sensitivity gain exceeding 3 dB.

ACP2026-0701-103

Combined Algorithmic and Architectural Improvements for Low-Power 400G OFEC Implementation

Evgeny Sirotkin[1*], Vladislav Obolentsev[1], Andrey Gorbunov[1], Vladimir Treshchikov[1]

1.T8 company, Russia

In our work, we show superior combination of algorithmic and architectural improvements to achieve low-complexity, low-power OFEC decoding solution. The designed BCH component code decoding SISO-core, as main building block of soft decoder, demonstrates ASIC complexity of ~130.3 Kgates only. At the same time, the error correction capability of our entire OFEC decoder is maintained at the required level of $2 \cdot 10^{-2}$ inBER, which corresponds to SNR ≤ 6.25 dB or NCG ≥ 11.14 dB at QPSK. The developed decoder successfully supports 100/200/400G operational modes, while the estimated power consumption of ~1.1 W at 400G payload results in energy efficiency ~2.75 pJ/bit.

ACP2026-0701-135

GOCT-Based Intra-Sub-band Precoding for SINR Equalization in DSBM-NFDM System

Runyang Zhang[1], Zhihang Sun[1], Shijie Hou[1], Yining Zhang[2,3*], Tianshuo Zhou[1], Na Wu[1], Chenglin Bai[1,3*], Hengying Xu[1,3*], Xinkuo Yu[1,3]

1.School of Physics Science and Information Engineering Liaocheng University, China; 2.School of Mathematical Sciences Liaocheng University, China; 3.Liaocheng Key Laboratory of Industrial-Internet Research and Application, China

To address the non-uniform SINR distribution in DSBM-NFDM system, we propose a GOCT-based sub-band precoding scheme that equalizes SINR, reduces its variance, and enhances Q-factor performance.

ACP2026-0701-138

Two-Stage EEPN Compensation with Higher Walk-Off Tolerance Using Selective Subcarrier Equalization in DSCM Systems

Tianshuo Zhou[1], Shijie Hou[1], Xiaozheng Li[1], Hengying Xu[1,2*], Conghao Zhuang[1], Yaozheng Yue[1], Chenglin Bai[1,2*], Xinkuo Yu[1,2], Tongxin Yang[1,2]

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To address residual EEPN caused by TIPTs walk-off truncation errors, we propose a two-stage scheme combining interleaved pilots and all-pass FIR filters. By effectively reversing phase errors, this approach enhances both system performance and stability.

ACP2026-0701-173

EMS-Oriented Geometry-Aided Truncated Soft Demapping for NB-LDPC-Coded Golden Angle Modulation

Jing Wang[1], Zhongxing Tian[1], Huan Huang[1], Dongdong Zou[1], Yi Cai[1*]

1.Soochow University, China

We propose GA-TSD for NB-LDPC-coded 64-GAM with EMS decoding, achieving 0.3 dB EbN0 gain over 64-QAM and 63.83% fewer distance-evaluation

ACP2026-0701-183

An FPGA-Based VSS-NLMS-DFE Receiver for NLOS Ultraviolet Communications

Dong Zhu[1], Yong Zuo[1*], Tian Luo[1], Siyuan Cai[1], Xiaobin Hong[1], Jian Wu[1]

1.Beijing University of Posts and Telecommunications, China

This paper presents a low-resource FPGA-based VSS-NLMS-DFE receiver for NLOS UVC. Simulations and HIL experiments demonstrate that the proposed receiver effectively suppresses ISI and reduces BER, confirming its feasibility.

ACP2026-0701-184

Phase Spreading-Enabled Multipath Interference Mitigation for IM/DD Interconnections

Xiaobo Zeng[1*], Pan Liu[1], Liangcai Chen[1], Ruonan Deng[2]

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We proposed a phase spreading technique using baseband Gaussian white noise-enabled to transform destructive multiplicative deep fading into additive incoherent noise, yielding a 2 dB reflection tolerance improvement and 9 dB power budget relaxation.

ACP2026-0701-204

Class-Wise Amplitude-Stratified Resampling for Small-Sample Neural-Network Equalization in IM/DD Systems

Yingmei Pan[1,2], Zhaopeng Xu[2*], Cancan Chen[2], Jianwei Tang[2], Linsheng Fan[2], Zhongliang Sun[2], Rui Jiang[2], Qibing Wang[2], Xu Zhang[2], Yan Li[1], Jian Wu[1], Zhixue He[2*]

1.State Key Laboratory of Information Photonics and Optical Communications, Beijing University of Posts and Telecommunications, China; 2.Pengcheng Laboratory, China

A class-wise amplitude-stratified resampling data augmentation method is proposed for small-sample neural-network equalization in IM/DD systems. About 62.5% and 56.4% reductions in the required training symbols are achieved for FNN- and CNN-based equalization, respectively, in a 10-km 50-GBaud PAM4 link.

ACP2026-0701-51

Experimental Demonstration of Complex-Valued ETDKAN for Digital Predistortion in Analog Radio-over-Fiber Links

Tianyu Jiang[1], Carlos Daniel Fontes Da Silva[2], Dan Li[1], Lu Zhang[3], Vjaceslavs Bobrovs[4], Xianbin Yu[3], Xiaodan Pang[3], Oskars Ozolins[4*], Edson Porto da Silva[2*]

1.KTH Royal Institute of Technology, Sweden; 2.Federal University of Campina Grande, Brazil; 3.Zhejiang University, China; 4.Riga Technical University, Latvia

We experimentally demonstrate a complex-valued envelope time-delay Kolmogorov-Arnold network for DPD in ARoF links, improving attenuation-robust linearization with up to 3.2-dB ACLR and 1.75-point EVM gains.

ACP2026-0701-59

CFO-Tolerant Feedforward Frequency-Domain MIMO Equalization for Coherent Optical Communications in the Presence of Severe IQ Impairments

Gao Ye[1,2], Jinlong Wei[1*], Jian Zhao[2*], Linsheng Fan[1], Zhaopeng Xu[1], Zhongliang Sun[1], Lingguo Cao[1], Hao Shi[1], Jianwei Tang[1], Yingying Zhou[1], Xiuli Ji[1], Jianyu Wang[1], Zhixue He[1]

1.Pengcheng Laboratory, China; 2.South China University of Technology, China

This paper proposes a carrier frequency offset (CFO)-tolerant feed-forward frequency-domain MIMO equalizer using real-valued training sequences. By applying localized inverse modulation, it perfectly decouples receiver IQ impairments from CFO, enabling robust post-MIMO CFO recovery.

ACP2026-0711-2

Hardware-Efficient Real-Time Chromatic Dispersion Compensation with FIR Folding and Three-Multiplier Complex Multiplication

Han Wang[1], Zhenming Yu[1*], Xiangyong Dong[1], Bohang Huang[1], Xu Zhang[1], Kun Xu[1]

1.Beijing University of Posts and Telecommunications, China

We propose a hardware-efficient real-time CDC architecture for coherent optical receivers, combining 32-GSPS-to-12-GSPS resampling, symmetric FIR folding, and three-real-multiplier complex multiplication to reduce DSP usage while maintaining comparable 100-km BER/EVM performance relative to same-throughput references.

ACP2026-0712-6

Gamma-Function-Based Digital Predistortion for MZM Nonlinearity Compensation in IM/DD Optical Transmission Systems

Zhiheng Liu[1], Aiying Yang[1*], Peng Guo[1], Meng Yang[1], Zhe Zhao[1], Yi Dong[1]

1.Beijing Institute of Technology, China

This work presents Gamma-DPD, a gamma-function-based digital predistortion method for compensating Mach–Zehnder modulator nonlinearity in PAM-based IM/DD systems, improving receiver sensitivity for PAM4 and PAM8 transmission across baud rates and distances.

ACP2026-0713-28

Dual-Polarization IQ Impairment Estimation Based on Single-Pixel Optical Modulation Analysis and Fourier Transform

Xinyue Yang[1]

1.Beijing Institute of Technology, China

A full-IQ-impairment-oriented SP-OMA with Fourier transform is proposed to jointly estimate dual-polarization IQ distortions for high-order coherent signals with reliable accuracy.

ACP2026-0714-29

Rate-Specific Decimation with Improved CFO Tolerance for Real-Time Multi-Rate Coherent Receivers

Yuwen Sun[1], Yizhou Wang[1], Chenghao Chay[1], Jing Li[1], Qile Jiang[1], Shenmao Zhang[1*], Xiaoxiao Dai[1], Qi Yang[1], Deming Liu[1]

1.Huazhong University of Science and Technology, China

A rate-specific decimation scheme is proposed for real-time multi-rate coherent receivers. Simulation and FPGA experiments show CFO tolerance improvement from 12.8% to 24% at both low-rate 312.5 Mbaud and high-rate 1.25 Gbaud.

ACP2026-0714-48

Performance Gain of WDM O-band Coherent Transmission using Machine Learning Clustering

Ogulcan Erdogan[1,2*], Shi Li[3], Elias Giacoumidis[3], Muyiwa Balogun[3], Robert Emmerich[1], Carsten Schmidt-Langhorst[1], André Richter[3], Jonas Gläsel[1], Felix Ganzer[1], Patrick Runge[1], Colja Schubert[1], Ronald Freund[1,4]

1.Fraunhofer HHI, Germany; 2.ID Photonics GmbH, Germany; 3.VPIphotonics GmbH, Germany; 4.Technical University Of Berlin, Germany

We present experimental results of WDM 32 GBd DP-16QAM transmission in the O-band over up to 80 km and two channel spacings. We demonstrate through simulations the effectiveness of a range of machine learning clustering algorithms in mitigating intra-/inter-channel nonlinearities while keeping computational cost low.

ACP2026-0714-58

A Residual Bidirectional Mamba-Based Nonlinear Equalization Method with Hard Block Partitioning for DP-16QAM Coherent Optical Systems

Zening Zhang[1], Chenling Bai[1,2*], Hengying Xu[1,2*], Honglei Yang[1], Lishan Yang[1,2], Haotian Zhu[1], Yang Gao[1], Yubin Li[1], Chunyi Su[1]

1.School of Physics Science and Information Engineering, Liaocheng University, China; 2.Liaocheng Key Laboratory of Industrial-Internet Research and Application, Liaocheng University, China

A nonlinear equalization scheme combining guard-band-free block partitioning and Res-BiMamba is proposed for DP-16QAM coherent optical communications, providing superior Q-factor, higher data utilization efficiency, efficient long-sequence modeling, and reduced computational complexity.

ACP2026-0715-127

Rank-Aware Boundary Relaxation of Spatially Coupled LDPC Codes for Coherent Optical Links

Changfeng Wang[1,2], Rui Jiang[2*], Xinke Tang[2], Zhaopeng Xu[2], Jian Song[1], Yuhan Dong[1*]

1.Tsinghua University, China; 2.Pengcheng Laboratory, China

We propose a rank-aware boundary relaxation method to mitigate termination-induced rate loss in short-chain SC-LDPC codes for coherent optical links. Thisdesign recovers 75% of the rate loss while preserving the desirable finite-length decoding performance.

ACP2026-0715-135

Low-Complexity Non-Integer Fractionally Spaced Equalizationfor 200-Gb/s PAM-4 Transmission

Huan He[1], Qiang Bin[1], Junwei Zhang[1*], Zhaohui Li[1], Chao Lu[2]

1.Sun Yat-Sen University, China; 2.The Hong Kong Polytechnic University, Hong Kong, China

A joint equalization scheme utilizing a non-integer fractionally spaced FFE (NIFS-FFE) and a LUT-MLSE is proposed for 200-Gb/s PAM-4 transmission over 1-km SSMF, improving receiver sensitivity while reducing computational complexity compared with previously proposed NIFS-FFE-MLSE.

ACP2026-0715-140

A Low-Complexity Fully Parallel 80-Point Non- Power-of-Two DFT Architecture for Frequency- Domain Clock Recovery

Hongyi Gan[1], Kaiyang Dong[1], Xuefeng Zou[1], Zuyu Li[1], Yuheng Liu[1], Fan Li[1*]

1.Sun Yet-Sen University, China

We propose a two-path fully parallel 80-point FT for non-integer-oversampling optical receivers using CRT/PFA, Winograd FT5, and DSP48E2 packing, achieving 280 DSP blocks, 40,696 LUTs, and 12-cycle latency, with Modified-Godard validation against MATLAB FFT.

ACP2026-0715-185

Full-Memory-Projection KAN Equalizer for Low-Complexity Nonlinearity Compensation in Coherent Fiber-Optic Systems

Shuaihang Wang[1], Yongjun Wang[1*], Xinyu Yuan[1], Feng Tian[1], Qi Zhang[1], Xiangjun Xin[2]

1.Beijing University of Posts and Telecommunications, China; 2.Beijing Institute of Technology, China

Full memory projection compresses symbol windows before an unpruned Kolmogorov-Arnold network, preserving nonlinear memory while reducing equalizer complexity. Experiments over 560 km using PM-64QAM demonstrate comparable performance with 34.45% fewer real multiplications required per symbol.

ACP2026-0715-212

Hardware Fingerprint Identification Based on Spiking Neural Networks for Trusted Access Networks

Weidong Shao[1*], Mingyi Gao[1], Gordon Ning Liu[1], Yi Cai[1], Gangxiang Shen[1]

1.Soochow University, China

Hardware fingerprint-based authentication emerges as a promising solution forinherent uniqueness and environmental adaptability. We propose ahardware fingerprint recognition strategy leveraging spiking neural networks, offering a power-efficient and low-latency alternative for trusted PON access.

ACP2026-0715-7

Detuning-Factor-Aided Newton-Schulz Iteration for Low-Complexity TSA-FD-MIMO Equalization in SDM Systems

Zhongliang Sun[1], Linsheng Fan[1], Zhaopeng Xu[1], Junpeng Liang[1], Tonghui Ji[1], Hui Chen[1], Chao Li[1], Lingguo Cao[1], Ye Gao[1], Jianwei Tang[1], Jianyu Wang[1], Hao Shi[1], Xiuquan Cui[1], Shunfeng Wang[1], Zhixue He[1], Jinlong Wei[1*]

1.Pengcheng Laboratory, China

We demonstrate a detuning-factor-aided Newton--Schulz iterative method for TSA-FD-MIMO equalization. Theoretical analysis establishes the feasibility of single-iteration optimization, which is experimentally validated with only 0.22/0.25 dB OSNR penalties at the 7%/20% FEC thresholds.

ACP2026-0715-99

Pilot-Distribution Optimization for Joint-Channel Carrier-Phase Estimation in Finite Symbol Blocks

Yawei Zheng[1], Feng Tian[1*], Qi Zhang[1], Haipeng Yao[1], Jing Zhang[1], Jianwei Zhou[1], Fu Wang[1], Hualei Shi[1], Chuanji Yan[1]

1.Beijing University of Posts and Telecommunications, China

We optimize the pilot distribution for finite-block joint-channel carrier-phase estimation to lower the phase-error variance. The proposed edge-aware hill-climbing algorithm reduces the MSE by 7.02% over the adapted staggered-pilot distribution.

ACP2026-0721-8

Joint Digital Predistortion and KK Detection-Enabled Second-Order Impairment Mitigation for Analog Mobile Fronthaul Link with PMDD

Mingliang Deng[1*], Ke Li[1], Xiangheng Luo[1], Qiang Liu[1], Chunsun Deng[1], Dengji Song[1]

1.Chongqing University of Posts and Telecommunications, China

A joint DPD and KK detection scheme is proposed for PMDD-based analog mobile fronthaul links, suppressing second-order impairments and SSBI. The scheme improves SFDR by 22.1dB and extends power dynamic range by 4.9dB.

ACP2026-0723-3
Theoretical Analysis and Design Boundaries of Pilot-Tone-Assisted Optical Phase-Locked Loops for DSP-Free Coherent Systems
Yu Yan[1], Puzhen Yuan[1], Zhengrong Zhao[1], William shieh[1*]
1.Westlake University, China
We establish a framework for pilot-tone-assisted optical phase-locked-loops (OPLL) in DSP-free coherent systems, showing that feedback delay constrains the achievable loop bandwidth, while laser-phase-noise, pilot-path noise, and data leakage jointly determine the feasible operating region.

ACP2026-0728-4
Tailored Training-Aided Ultra-Low-Complexity Real-Time Frame Synchronization via Coefficient-Clustered Accumulation
Jianwei Tang[1,2], Jianyu Wang[1], Lingguo Cao[1], Hao Shi[1], Gao Ye[1], Cancan Chen[1], Yingmei Pan[1], Zhaopeng Xu[1], Junpeng Liang[1], Zhongliang Sun[1], Linsheng Fan[1], Yanfu Yang[2*], Zhixue He[1], Jinlong Wei[1*]
1.Pengcheng Laboratory, China; 2.Harbin Institute of Technology, China
A real-time frame synchronization scheme is proposed for coherent optical receivers using tailored preamble, coefficient-clustered accumulation, and shift-register reuse. For a 64-symbol header, adjacent-product evaluations decrease by 98.3%, with validated FPGA alignment.

ACP2026-0729-5
Chromatic-Dispersion-Robust Digital Clock Recovery for C-Band 128-Gb/s Single-Sideband PAM4 Direct-Detection Transmission over 20-km SMF
Puzhen Yuan[1], Haojie Zhu[1], Yuhao Fang[1], Pu Zhou[1], Yu Yan[1], Weiqi Lu[1], Dayu Shi[1], William Shieh[1,2*]
1.Westlake University, China; 2.Westlake Institute for Optoelectronics, China
We experimentally demonstrate that chromatic dispersion degrades Mueller–Müller clock recovery in 128-Gb/s SSB PAM4 IM/DD systems and mitigate it using an embedded 7-tap FFE.

T4: Free-Space Transmission and Communication Systems

ACP2026-0604-1
Autoregressive Generation of Atmospheric Turbulent Wavefront Phase Using Speckle-Based Optical Reservoir Computing
Yifan Wang[1], Yicong Ma[1], Dongye Xu[1], Haodong Liu[2], Wei Lin[1*], Haifeng Liu[1], Bo Liu[1]
1.Institute of Modern Optics, College of Electronic Information and Optical Engineering, Nankai University, China; 2.College of Electronic Information and Optical Engineering, Nankai University, China
We propose a speckle-based optical reservoir computing method for autoregressive generation of turbulent wavefront phases, producing long-term sequences consistent with true turbulence in amplitude, spatial structure, spectra, and statistics for real-time adaptive optics prediction tasks.

ACP2026-0610-4
Dynamic Power Allocation for NLOS CSS-VLPC With LED Nonlinearity
Zhaoqiang Zeng[1,2,3,4], Shiyao Gu[2,3,4,5], Jiakun Zhang[1,2,3,4], Zhiqiang Zheng[1,2,3,4], Bangjiang Lin[2,3,4*]
1.School of Advanced Manufacturing, Fuzhou University, Quanzhou, China; 2.Quanzhou Institute of Equipment Manufacturing, Haixi Institutes, Chinese Academy of Sciences, Quanzhou, China; 3.University of Chinese Academy of Sciences, Fujian College, Quanzhou, China; 4.Fujian Provincial Key Laboratory of Intelligent Identification and Control of Complex Dynamic System, Quanzhou, China; 5.The College of Mechanical and Electrical Engineering, Fujian Agriculture and Forestry University, Fuzhou, China
This paper presents a DWSAC-based optical power allocation framework for NLOS CSS-VLPC, balancing LED nonlinearity, BER, spectral-efficiency lower bound, and CRLB positioning accuracy to optimize DC/AC operating points for robust integrated links.

ACP2026-0629-17
Adaptive Input-Enhanced SE and Gated Residual Network for Label-Free Channel Estimation in UAV-FSO Communications
Jiqing Liu[1], Tingwei Wu[1*], Lei Guo[1]
1.Communications and Information Engineering Chongqing University of Posts and Telecommunications, China
AdaSERes-Net achieves label-free UAV-FSO channel estimation under atmospheric turbulence via input-enhanced squeeze-excitationand gated residual connections, reducing NMSE by 59.3% over FC-DNN at 30 dB SNR with superior data efficiency.

ACP2026-0629-29
Kolmogorov-Arnold Network-Based Equalizer for PAM4 Chaotic Space Optical Communication under Turbulence and Mismatch
Zekun Feng[1], Yuan Feng[1], Yilin Song[1], Jiahao Ge[1], Yuan Liu[1], Li M[1*]
1.Nanjing University, China
A physics-guided Kolmogorov–Arnold Network (KAN) equalizer is proposed for 25-GBaud PAM4 chaotic free-space optical (FSO) transmission over a 1000-km turbulent downlink. It shows BER improvement under turbulence and receiver parameter mismatch.

ACP2026-0630-116

Physics-Driven Unsupervised Multi-Mode OAM Decomposition under Atmospheric Turbulence

Zhiyang Zhang[1], Xiongfeng Rao[2], Li Yang[1*]

1.University of Science and Technology of China, China; 2.Guilin University of Electronic Technology, China

We propose PRISM, a physics-driven unsupervised neural network for quantitative OAM decomposition across multi-order Laguerre-Gaussian modes. Without ground-truth labels, PRISM achieves 0.918 amplitude correlation under strong atmospheric turbulence, outperforming supervised baselines by +0.307.

ACP2026-0630-22

A TCN Based Adaptive ATP Control Method for Inter Satellite Laser Communication

Xinyu Wang[1], Hui Yang[1*], Zhe Niu[1], Yuxuan Yan[1], Qiuyan Yao[1], Buzheng Wei[2]

1.Beijing University of Posts and Telecommunications, China; 2.China Unicom Research Institute, China

This paper proposesTPA-ATP, a TCN based ATP method for optical links between satellites. The proposed method improves multiple ATP tasks in one control framework, shortens the tracking error convergencetime, and improves BER performance.

ACP2026-0630-38

Propagation and dynamic obstacle evasion properties of a radially polarized partially coherent crescent-like beam in turbulence atmosphere

Jiaao Shi[1], Bing Zhu[1*]

1.Department of Electronic Engineering and Information Science University of Science and Technology of China, China

We introduce a radially polarized partially coherent crescent-like beam that maintains a highly stable asymmetric profile in atmospheric turbulence. Utilizing phase pre-compensation and its inherent self-healing, we demonstrate controllable dynamic obstacle evasion for robust communications.

ACP2026-0630-47

Vector-Beam Concurrence Keying for Turbulence-Resilient Free-Space Optical Communication

Jiazheng Ding[1*], Shuangcheng Chen[1], Mengjie Zhou[1], Zheng Wu[1], Shiyu Shi[2], Mingfeng Xu[2]

1.Tianfu Xinglong Lake Laboratory, China; 2.National Key Laboratory of Optical Field Manipulation Science and Technology, Chinese Academy of Sciences, China

We propose a vector-beam concurrence keying (VCK) scheme for turbulence-resilient free-space optical communications. By encoding information in vector-beam concurrence, the method suppresses scintillation-induced degradation and achieves improved error performance under atmospheric turbulence.

ACP2026-0630-88

Adaptive Beam Aiming and Tracking Based on Relative Positions for Moving-Terminal Optical Wireless Communications

Tongling He[1], Chengze Ming[1], Yining Xu[1], Jiaheng Lyu[1], Zihui Lin[1], Shiming Gao[1]

1.Zhejiang University, China

A beaconless adaptive beam tracking method using relative position is proposed formoving-terminal OWC. With kinematic compensation and dynamic feed-forward overdrive, it achieves 0.06° accuracy, ensuring moving-target connectivity when tailored to different divergence angles.

ACP2026-0701-199

Transmission Performance Assessment of Turbulent Free-Space Optical Channels Using a Hot-Air Optical Turbulence Generator

Tianze Lin[1*], Li Pei[1], Jianshuai Wang[1]

1.Beijing Jiaotong University, China

This paper presents an experimental assessment of transmission-performance degradation in a turbulent free-space optical (FSO) channel using a hot-air optical turbulence generator as a repeatable channel emulator. The generated turbulence is characterized by off-axis digital holography and beam-wander analysis, and its impact on an IM/DD PAM4 link is evaluated through received power, SNR, and BER. The results link turbulence-induced optical-field perturbations with measurable coupling loss and signal-quality deterioration.

ACP2026-0701-238

Research on Propagation Characteristics of Vector Vortex Beams in Turbulent Atmosphere

Lequn Yang[1], Bing Zhu[1*]

1.Department of Electronic Engineering and Information Science, University of Science and Technology of China, China

Hybrid-polarization vector vortex beams suppress scintillation and wander, while perfect vector vortex beams perform best due to constant ring radius, guiding beam selection for turbulence-resilient FSOC.

ACP2026-0701-243

Impairment-Calibrated Sim-to-Real Transfer for OFDM-FSO Modulation Format Recognition

Qianwu Zhang[1], Xiaofang Zhang[1], Ke Zhang[1], Zhiyu Li[1]

1.Shanghai University, China

Impairment-calibrated Sim-to-Real transfer enables label-efficient modulation recognition in an experimental OFDM-FSO link. Pre-training on calibrated simulations and fine-tuning with 36 measured frames improves accuracy from 61.0% to 81.8%, reaching 95.9% with full measured training data.

ACP2026-0701-3

Wavefront-Sensorless Adaptive Optics Using a Lightweight Compensation Model for Turbulence-Resilient FSOCommunications

Haifeng Deng[1], Yue Zhu[1], Yuhao Zhou[1], Caiying Li[1], Yejun Liu[1*], Shasha Liao[1], Lei Guo[1]

1.Chongqing University of Posts and Telecommunications, China

This paper proposes a wavefront-sensorless AOcompensation schemebased on a lightweight residual network model.Experimental results demonstrate that the proposed schemeeffectively improves the Strehl ratio and coupling efficiency under various turbulence strengths.

ACP2026-0701-39

Turbulence-Tolerant High-Dimensional Information Coding with Multi-Ring Perfect Vector Vortex Beams

Xiaohang Jia[1], Changlin Yi[1], Wenbiao Hou[1], Yulu Dai[1], Andong Wang[1], Long Zhu[1*]

1.Chongqing University of Posts and Telecommunications, China

Multi-ring perfect vector vortex beam enables 16-bit/symbol transmission with 216 states. Under D/r04, BER remains below the 7% HD-FEC limit of 0.38%and the state decoding accuracyis above 0.97, enhancing free-space optical communication capacity.

ACP2026-0701-42

Transmission characteristics of free-space autofocusing vortex beams with joint amplitude and phase modulation under atmospheric turbulence

Xiaohang Jia[1], Changlin Yi[1], Wenbiao Hou[1], Yulu Dai[1], Andong Wang[1], Long Zhu[1*]

1.Chongqing University of Posts and Telecommunications, China

Joint amplitude-phase modulated vortex beam (JAP-VB) is proposed. Under atmospheric turbulence with limited apertures, it improves received power and BER versus phase-only modulation, demonstrating superior robustness for free-space optical communications.

ACP2026-0710-2

Optical-Power-Aware Fast Wake-Up Modeling for Low-Power Satellite Coherent Optical Receivers

Hao Ding[1,2*], Yanhao Chen[3], Decai Liu[1,2], Qianwu Zhang[1,2,3], Yingxiong Song[1,2,3], Junjie Zhang[1,2,3]

1.Key Laboratory of Specialty Optics and Optical Access Networks, Shanghai, China; 2.Institute for Advanced Communication and Data Science, Shanghai University, China; 3.Teralink Optical Corporation (Shanghai), China

We present an optical-power-aware fast sleep/wake method for satellite coherent receivers. EDFA input power guides FPGA-controlled ADC and clock power states, reducing receiver power by 10.71W and wake-up time to 0.461s without full power cycling.

ACP2026-0711-4

2D Optical Wireless Communications via WDM Enabled Optical Phased Array

Caiming Sun[1*], Jiarui Zhang[1]

1.The Chinese University of Hong Kong - Shenzhen, China

2D OWC are experimentally demonstrated WDM excited OPA. The angle coverage of this OPA enabled OWC is achieved as 50°×29.6° in 2D directions of ψ by θ with 1-Gbps data rate for each user.

ACP2026-0711-7

Reservoir Computing Based on VCSEL Model for Signal Equalization in Optical Wireless Communication

Yunhan Jiang[1], Xiong Deng[1], Junlin Chen[1], Yeping Huang[1], Ping Fu[1], Hongna Zhu[1], Xihua Zou[1],Wei Pan [1], Lianshan Yan[1]

1.Southwest Jiaotong University, China

Optical Wireless Communication (OWC) is a promising technology for next-generation wireless communication, but signal distortion caused by device nonlinearity remains a critical challenge. Vertical-cavity surface-emitting lasers (VCSELs) offer significantly higher modulation bandwidth than LEDs, which makes them attractive for high-speed OWC systems.

However, VCSELs introduce more complex nonlinear dynamics due to relaxation oscillations that arise from the coupled carrierphoton interaction. In this paper, we propose a model-drivenre servoir computing (RC) method that utilizes a nonlinear VCSEL rate-equation model as the activation function for RC to improve the performance of OWC. Unlike traditional RC with randomly connected reservoirs, the proposed approach embeds the physical VCSEL dynamics, which are characterized by coupled carrier and photon densities with multi-timescale memory, directly into the reservoir layer. Numerical simulation results demonstrate that the model-driven RC method achieves the lowest BER among all compared methods across the entire SNR range. At high SNR, the model-driven RC consistently outperforms both Volterra and traditional RC equalizers.

ACP2026-0713-21

Wavefront-Sensorless Turbulence Compensation via D2NN for OAM-based Free-Space Optical Communication

Changlin Yi[1], Yulu Dai[1], Wenbiao Hou[1], Lang Zhou[1], Xiaohang Jia[1], Andong Wang[1], Long Zhu[1*]

1.School of Communications and Information Engineering,Chongqing University of Posts and Telecommunications, China

Atmospheric turbulence severely degrades OAM mode demultiplexing in free-space optical links. Conventional compensation schemes, however, generally mandate the use of wavefront sensors or cameras for optical field interrogation, resulting in highly complex and bulky receiver architectures. To address this, we leverage a single-screen numerical model to recast turbulence compensation as a task-specific, detector-window-power-driven optimization problem rather than a full wavefront reconstruction task. The distorted field is sequentially probed by three fixed phase masks alongside the frozen D2NN itself. Crucially, only the resulting 3 x 5 detector-window powers are gathered as sensing data to derive label-free input features. A multilayer perceptron (MLP) maps these features to 55 low-order phase-basis coefficients, which synthesize a phase-only compensation mask placed before the frozen D^2NN to redistribute power toward the intended detector window. For D/r0 = 4, this method substantially enhances the mode purity from 0.6985 to 0.9630, while suppressing the total off-target crosstalk from -4.46 dB to -15.22 dB, approaching the theoretical oracle baseline of -15.44 dB.

ACP2026-0714-17

MAP-SFViT: A Spatial-Fourier Fusion Vision Transformer for Robust OAM Symbol Recognition over Turbulent FSO Links

Huadong Wu[1], Xiaotian Du[2], Xiongfeng Rao[3], Li Yang[1*]

1.Department of Electronic Engineering and Information Science, University of Science and Technology of China, China; 2.School of Information and Communication Engineering, University of Electronic Science and Technology of China, China; 3.School of Optoelectronic Engineering, Guilin University of Electronic Technology, China

We propose MAP-SFViT(Mode-Amplitude-Phase Spatial-Fourier Fusion Vision Transformer), a demodulator for 1000-m OAM-FSO links. It jointly exploits mode, power-allocation, and relative-phase for multi-DoF modulation, achieving 100% accuracy under weak-to-moderate turbulence and 86.85% even in severe turbulence.

ACP2026-0714-4

Iterative-Refinement One-Bit DSM for DAC-Free OFDM in Optical Camera Communications

Dechun Wu[1], Xiaodi You[1*], Yang Hong[2], Bingyun Liu[1], Jian Chen[3], Changyuan Yu[4], Mingyi Gao[1], Gangxiang Shen[1]

1.Soochow University, China; 2.Microsoft, United Kingdom; 3.Nanjing University of Posts and Telecommunications, China; 4.The Hong Kong Polytechnic University, Hong Kong, China

We propose a DAC-free orthogonal frequency division multiplexing scheme for optical camera communications using one-bit delta-sigma modulation, where iterative preprocessing mitigates rolling-shutter-induced inter-symbol interference. Experimental results demonstrate reliable transmission with support for higher-order modulation formats.

ACP2026-0715-152

Modeling and Analysis of Asymmetric Product Codes for Lunar Coherent Laser Communications

Yiwei Wu[1,2], Ruibin Zheng[3], Yifan Ye[3], Mingyuan Sun[3], Yan Xia[1,2], Yi Lei[3], Bin Chen[3*]

1.Deep Space Exploration Lab, China; 2.National Key Laboratory of Deep Space Exploration, China; 3.Hefei University of Technology, China

Earth-Moon free-space optical (FSO) communication is a promising solution for future lunar communication systems. In this paper, an Earth-Moon coherent FSO channel model is established by jointly considering the major channel impairments, and the recently proposed asymmetric polar-BCH product-code (PC) scheme is evaluated using the proposed model. Simulation results show that the proposed polar-BCH PC achieves up to 8.06 dB reduction in required launch power compared with the conventional BCH-BCH PC under Earth-Moon optical laser communication scenarios.

ACP2026-0715-170

A Real-Time 16-PPM Transceiver Architecture With 10GbE-Compatible Service Interface for Deep-Space Optical Communication Terminals

Caixuan Zhuang[1], Yuwen Sun[1], Yuanxiang Wang[2], Erzhuo Sun[2], Mingkun Teng[2], Shenmao Zhang[1], Xiaoxiao Dai[1], Qi Yang[1*], Deming Liu[1]

1.Huazhong University of Science and Technology, China; 2.Bianfu Optoelec. Technologies Co., China

A real-time 16-PPM transceiver architecture with a 10GbE-compatible interface is proposed for deep-space optical communications. Prototype validation demonstrates 1-h continuous operation with BER performance at the 10^{-8} level.

ACP2026-0722-5

Chaos Assisted Directional Acquisition and Adaptive Tracking for Free Space Optical Communication

Meitong Yu[1], Jiaheng Wang[1*], Jinting Chen[1], Shicheng Zhu[1], Qianyun Ling[1], Xiqi Gao[1]

1.Purple Mountain Laboratories, China

A chaos assisted directional acquisition and adaptive tracking method is proposed, combining spatial probability mapping, YOLOv8s sub-pixel positioning, and chaotic Kalman filtering. It shortens acquisition time and improves beam tracking stability in free-space optical communication.

Poster Session-NP-Track

Content

NP1: Fiber-Based and Free-Space Sensing

ACP2026-0617-2
Field Trial of Urban Traffic Vibration Monitoring withIn-Service Communication Optical Cable
Chuanbiao Zhang[1*], Xiongyan Tang[1], Shikui Shen[1], He Zhang[1], Zelin Wang[1], Hu Li[2], Shaohui Wu[3], Yu Tang[1]
1.China Unicom Research Institute, China; 2.China Unicom Beijing Branche, China; 3.Beijing Municipal National Defense Mobilization Office, China
Using redundant urban optical fibers, this paper monitors a 2.7 km tunnel and 1.8 km metro section to reveal traffic operation differences.

ACP2026-0623-1
Polarization Diversity Combining Algorithms for DAS: A Comparative Study
Jiaying Chang[1], Mingda Zhu[1*], Minghai Wang[1], Ruihao Duan[1], Xinxin Wang[1], Jacopo Nanni[2], Giovanni Tartarini[2]
1.China University of Petroleum (Beijing), China; 2.University of Bologna, Italy
We compare five polarization diversity combining algorithms for distributed acoustic sensing (DAS). Evaluated by amplitude fluctuation, fading rate, phase signal-to-noise ratio (SNR) and background noise, rotation vector summation (RVS) achieves the best performance.

ACP2026-0623-3
Effective Four-Domain Joint Fading Noise Suppression Method for DAS
Jiaying Chang[1], Mingda Zhu[1*], Ruihao Duan[1], Minghai Wang[1], Xinxin Wang[1], Jacopo Nanni[2], Giovanni Tartarini[2]
1.China University of Petroleum (Beijing), China; 2.University of Bologna, Italy
This paper proposes a four-domain joint suppression method to mitigate fading noise in distributed acoustic sensing. Achieving 0.35% fading rate and −70.03 dB background noise over 10 km fiber, this method significantly enhances the detection capability of weak vibrations.

ACP2026-0624-3
High-Precision Submarine Earthquake Localization and Magnitude Estimation via Bent-Segment Wavefront Masking
Bing Yue[1], Yan Zheng[2], Shaoyi Chen[2], Bo Wu[1], Peng Sun[1], Xumeng Liu[1], Yichang Wu[2*], Zhaohui Li[2], Chao Li[1*], Zhixue He[1]
1.Pengcheng Laboratory, China; 2.Sun Yat-sen univeisity, China
We present a distributed acoustic sensing-based submarine earthquake localization method using bent-segment wavefront masking of cables,achieving 3.878 km location error and Mw 0.16 magnitude error for events within 500 km with a single cable.

ACP2026-0626-13
Optimized Design of Photonic Integrated Interferometric Imaging Based on an Offset Multistage Microlens Array
Jiaheng Wang[1], Yong Zuo[1], Xiaohan Song[1], Ziteng Gao[1], Haijian Ji[1], Jian Wu[1]
1.Beijing University of Posts and Telecommunications, China
This paper proposes an integrated interferometric imaging scheme based on an offset multistage microlens array and a compressed-sensing-based image reconstruction algorithm, which addresses imaging artifacts and distortions and significantly improves imaging quality.

ACP2026-0629-2
A dual-channel fiber-optic sensing scheme based on phase-shift fiber loop ring-down technology
Aodi Yu[1*], Ningxiang Yan[1]
1.Jimei University, China
A dual-channel fiber-optic sensing scheme based on phase-shift fiber loop ring-down (PS-FLRD) technology is proposed and experimentally demonstrated. Independent channel demodulation is achieved through loop length mismatch and frequency-switched interrogation.

ACP2026-0629-6
SpatialNet-Assisted Separation of Two-Source Mixed Sound Signals in Distributed Acoustic Sensing
Haijun He[1*], Zhen Zhang[1]
1.Southwest Jiaotong University, China
SpatialNet is adapted to separate two-source mixed sound signals recorded by DAS, using multichannel spatial information, simulated pretraining, and delay-compensated CI-SDR loss to improve separation performance while reducing labeled data dependence.

ACP2026-0629-7

Laser Frequency Drift Suppression of Φ-OTDR Using Electro-Optic Modulated Symmetric Dual-Reference Pulses

Ziyi Xu[1], Mincong Deng[1], Fan Li[1*]

1.Sun Yet-sen University, China

This paper presents a triple-pulse Φ-OTDR system based on a single IQ modulator for low-frequency vibration detection. An amplitude-weighted dual-reference fitting algorithm suppresses low-frequency noise caused by laser frequency drift and reduces fading-related phase distortion.

ACP2026-0630-118

Improved PGC-Arctan Demodulation Algorithm by Combining Odd Harmonics

Fangshuo Shi[1], Haoyan Liu[1], Yuxiang Wei[1], Yan He[1], Yanjun Chen[2*], Zhengbin Li[1]

1.Peking University, China; 2.Central South University, China

We propose an improved PGC-Arctan demodulation algorithm that combines odd harmonics proportionally to maxi mize the signal-to-noise ratio of fiber-optic interferometric sensor. Without changing optical configuration, the proposed algorithm enhances sensitivity by a factor of 1.59.

ACP2026-0630-120

Temperature-Insensitive Long-Period Fiber Gratings in Anti-Resonant Hollow-Core Fibers

Tianze Zhang[1]

1.Fudan University, China

Long-period fiber gratings (LPFGs),based onanti-resonant hollow-core fibers (AR-HCFs),are fabricatedby use oftheelectric arc dischargemethod. Periodic refractive index modulation is achieved via localized arc-discharge-induced microdeformation without compromising the structural integrity of the AR-HCF. The fabricated LPFG featuresdualresonant dipsof −18.2 dB at 1401.6 nm and −17.5dB at 1638.6nm.Notably, the proposed AR-HCF-LPFG demonstratesexcellent temperature stability.One resonant dipexhibits near-zero temperature sensitivity, while the other dipshows asensitivityof −3.22 pm/°Cover20–100 °C, effectively suppressing temperature-induced cross-sensitivity.

ACP2026-0630-42

High-Accuracy FBG Temperature Interrogation Based on a DFB Laser Array and an MLP Neural Network

Shuaixiao Zhou[1], Yaqiang Fan[1*], Haolin Xia[1], Jingxuan Zhang[1], Zhenxing Sun[1], Yuan Lv[1], Xiangfei Chen[1]

1.Nanjing University, China

A high-speed FBG temperature interrogation system based on a REC-DFB laser array and an MLP neural network is demonstrated, achieving accurate and robust temperature measurement over a wide sensing range.

ACP2026-0630-65

Experimental Investigation of the Spectral Resolution of a Tapered Multimode Fiber Computational Spectrometer

Siyue Jin[1], Zhen Zhen[1], Hui Chen[1], Qibing Wang[1], Xu Zhang[1], Jingbin Feng[1], Lei Wang[1], Zhixue He[1*]

1.Peng Cheng Laboratory, China

A tapered multimode fiber computational spectrometer is proposed, achieving broadband single-peak reconstruction across the S, C, and L bands and dual-peak reconstruction with 20 pm spacing. Speckle correlation analysis experimentally determines its spectral resolution.

ACP2026-0630-76

Demonstration of Fiber-Dependent Brillouin Frequency Variations in a Submarine Telecommunications Cable

Hailiang Zhang[1], Hui Dong[1], Nhu Khue Vuong[1], Yixin Wang[1], Meng Fai Yue[2], Bien Aik Tan[3], Dora Juan Juan Hu[1]

*1.Institute for Infocomm Research (I2R), Agency for Science, Technology and Research (A*STAR), Singapore; 2.Singapore Telecommunications Limited (Singtel), Singapore; 3.Maritime Port Authority of Singapore, Singapore*

BOTDA measurements on a submarine telecommunications cable demonstrated fiber-dependent responses to natural environmental variations. The results highlight the influence of cable–fiber coupling and emphasize the need to account for fiber-specific characteristics when using existing submarine telecommunications cables for distributed environmental sensing.

ACP2026-0701-130

A 1550 nm All-Fiber Mode-Selective Coupler for Annular Beam Generation Toward NIR-II STED Applications

Baoying He[1], Xiaojie Guo[1], Boyi Yang[1], Wenhua Ren[1], Youchao Jiang[1], Guobin Ren[1]

1.Beijing Jiaotong University, China

A 1550 nm all-fiber mode selective coupler generates LP_{11} and annular beams for NIR-II STED microscopy. Experiments characterize its conversion efficiency, purity, excess loss and compatibility with our home-built STED system after objective focusing.

ACP2026-0701-142
High-sensitivity audible acoustic sensing based on WGM microbubble resonator
Shenghan Hou[1], Yu Guo[1], Bing Duan[1*], Xiaochong Yu[2*], Xiaoning Guan[1], Feng Qin[3], Daquan Yang[1]
1.Beijing University of Posts and Telecommunications, China; 2.Beijing Normal University, China; 3.No.34 Research Institute of China Electronics Technology Group Corporation, China
We propose a high-sensitivity audible acoustic sensor based on a microbubble resonator integrated with a suspended beam. Benefiting from the efficient mechanical conduction, this structure achieves a peak sensitivity of 12.9 μ Pa/Hz1/2 at 4430 Hz.

ACP2026-0701-241
Wide-Dynamic-Range Polarization-Sensitive Optical Fiber Vibration Sensor Based on a PM 3x3 Coupler Phase Demodulation Scheme
Geyi Chen[1], Yi Jiang[1], Haosen Wang[1], Huimin Huang[1], Zhenrong Zhang[1], Xuefeng Wang[1*]
1.Guangxi University, China
This paper proposes a PM 3x3 coupler fiber vibration sensor using adaptive ellipse fitting. Over a 1.1–15.2 rad range, the proposed G3 scheme maintains high correlation (0.999), significantly reduces THD, and eliminates signal fading.

ACP2026-0701-49
Density-Aware Sparse Regional Transformer for LiDAR Point Cloud Object Detection
Jinpeng Su[1], Lulu Guo[2], Tian He[1], Xihua Zou[1], Lianshan Yan[1], Hui Yang[1*]
1.Southwest Jiaotong University, China; 2.Beijing Dohitech Technology Co., Ltd., China
DASRT improves LiDAR 3D detection with shared-query dual-scale attention and density-aware region selection, adapting contextual aggregation to non-uniform point density and outperforming CenterPoint-Pillar on KITTI, especially for sparsetargets, with up to 4.39 mAP gains.

ACP2026-0714-3
Tracking of Optically Propelled Nanoparticles in a Hollow-Core Fiber Using an Event-based Camera
Qikai Chang[1], Fei Wang[1], Rui Wang[1], Shangran Xie[1*]
1.Beijing Institute of Technology, China
Event-based tracking of 150-nm-diameter silica nanoparticles propelled within an anti-resonant hollow-core fiber is demonstrated. Through the integration of defocused particle imaging with a two-step trajectory tracking framework, continuous and high-precision nanoparticle velocimetry is achieved.

ACP2026-0714-42
V-Shaped Tapered Optical Fiber Sensor for Enhanced Refractive-Index Sensing and In-Pouch Electrolyte Spectral Monitoring
Zhi Wang[1*], Xianda Wang[1*], Ziyi Xu[1*], Huibo Han[2*], Jing Sun[1*], Kumar Santosh[3*], Bingyuan Zhang[2], Junxian Hou[1*], Fei Liu[1*], Xian Zhou[1*]
1.University of Science and Technology BJ, China; 2.Liaocheng University, China; 3.KoneruLakshmaiahEducation Foundation, India
Bending tapered optical fibers into a V geometry increases refractive index sensitivity from 20.44 to 96.95 nm/RIU with a 40 μ m waist, enabling qualitative spectral monitoring of LiFSI composite electrolyte during heating in pouch cells.

ACP2026-0714-5
Rep-U-Net: A Deep Learning Framework for Pixel-level Heartbeat Bipolar-IJK Complex Segmentation Based on Fiber -BCG
Yuqing Li[1], Xiaodi You[1*], Sihan Yu[2], Jian Chen[3], Changyuan Yu[4], Wei Xu[5*]
1.Soochow University, China; 2.National University of Singapore (Suzhou) Research Institute, China; 3.Nanjing University of Posts and Telecommunications, China; 4.The Hong Kong Polytechnic University, Hong Kong, China; 5.Southeast University, China
A novel Rep-U-Net multi-task deep learning framework is presented for pixel-level heartbeat bipolar-IJK complex segmentation using fiber phase-sensitive ballistocardiogram (-BCG) with a segmentation accuracy of 96.93%, showing great potential in future unobtrusive cardiac diagnosis.

ACP2026-0714-53
Learnable Wavelet Packet Transform for Time-Efficient Denoising of HCF-OTDR
Jialun He[1], Bingjie Zhang[1], Mingchun Chen[1], Jiaping Xu[1], Jiawei Wan[1], Tao Yang[1*]
1.State Key Lab of Information Photonics and Optical Communications, Beijing University of Posts and Telecommunications, China
We present a learnable wavelet packet transform (LWPT) for time-efficient HCF-OTDR denoising. LWPT shortens the acquisition-and-processing time by over one order of magnitude relative to conventional wavelet denoising, while preserving noise-suppression performance and event integrity.

ACP2026-0714-61
High-precision FMCW optical time delay measurement with optical phase noise suppression
Zhenglin Tang[1,2], Junji Chen[1,2], Yuzhe Wu[1,2], Yaowen Zhang[1,2*], Zhiyao Zhang[1,2], Yong Liu[1,2]
1.University of Electronic Science and Technology of China, China; 2.State Key Laboratory of Electronic Thin Films and Integrated Devices, China
A frequency modulated continuous wave optical time-delay measurement system with optical phase noise cancellation is demonstrated. The Allan deviation is calculated to be 0.12 ps at an averaging time of 243.1 μ s.

ACP2026-0715-130

High-Precision Optical Cavity Length Demodulation Method for Fiber-Optic FPE Pressure Sensors Based on a Normalized Cross-Correlation Algorithm

Haiqin Wang[1], Cheung Yang[1*], Boda Yu[1], Yuefeng Qi[1*], Zhenguo Jing[1], Wei Peng[1]

1.Yanshan University, China

A normalized cross-correlation based method is proposed for F-P cavity length demodulation in a fiber-optic pressure sensor. Experiments from 0 to 1000 kPa yield 3.88 nm/kPa sensitivity with excellent linearity, high accuracy, and strong noise immunity.

ACP2026-0715-15

Experimental Response of Distributed Sensing to Simulated Ice Coating on OPGW

Qin Xiao[1*], Xiaomeng Xia[2*], Ziqi Dong[2], Mingyang Sun[2], Yixuan Tan[3], Min Zhao[3], Jian Xu[1], Juntao[1], Wu Jianjun Rao[1], Shiyu Zhang[1], Hualin Qi[1], Ying Tie[1]

1.ACCELINK Technologies CO., LTD., China; 2.Information & Telecommunication Center State Grid Corporation of China, China; 3.Information & Communication Company State Grid Sichuan Electric Power Company, China

Ice coating on OPGW is simulated in laboratory by loading weight on the cable. A ϕ OTDR based ice sensing modelis verified under circumstancesof uniform icing distribution and unilateral icing distribution within a span.

ACP2026-0715-197

Resonance Enhanced Readout of Low Frequency Magnetic Fields Using a Heterogeneous Integrated Optical Fiber with a Side Nickel Core

Mengting Mou[1], Zhuoyue Sun[1], Mengshi Zhu[1], Liang Zhang[1], Heming Wei[1], Fufei Pang[1*]

1.Shanghai University, China

We demonstrate frequency conversion using a side nickel core fiber magnetic field sensor. Translating low frequency components to the 360 Hz resonant region improves average SNR by 33.1 dB and supports offline phase waveform synthesis.

ACP2026-0715-31

A Fast Full-Spectrum Frequency-Band Energy Extraction Method for High-Volume DAS Data in Hydraulic Fracturing Interpretation

Yunchuan Xiong[1], Fei Liu[1], Xin Huang[2*], Yichen Wang[1], Guo Zhu[1], Xian Zhou[1]

1.University of Science and Technology Beijing, China; 2.Sinopec Petroleum Exploration and Production Research Institute, China

This paper proposes FFS-FBE for DAS data, organizing phase records as a window-sample-depth array, using tensor batch operations to build reusable PSD tensors, generating FBE images via spectral accumulation, reducing overhead while maintaining principle.

ACP2026-0715-43

Birefringence-Derived Distributed Large-Strain Sensing in Polarization-Maintaining Fiber Based on Polarization OFDR

Lijie Wang[1], Huajian Zhong[1], Shijie Li[1], Rongyi Shan[1], Cailing Fu[1], Yiping Wang[1*]

1.Shenzhen University, China

A polarization-OFDR method measures distributed strain from birefringence variation between PANDA fiber polarization axes. Dual-axis matching enables 0–12000 $\mu\varepsilon$ sensing at 5 mm resolution, with $5.26\times10^{-9}/\mu\varepsilon$ sensitivity and $R^2 = 0.9997$.

ACP2026-0715-44

Gain-Enhanced Carbon Monoxide Sensing in a D-Shaped Active Fiber Cavity

Manjun Zhang[1], Yu Tan[2], Lei Peng[1], Yuchen Wang[2], Baicheng Yao[2], Teng Tan[2*]

1.Guangdong Provincial Key Laboratory of Electric Power Equipment Reliability, Electric Power Research Institute of Guangdong Power Grid Co., Ltd., China; 2.Key Laboratory of Optical Fiber Sensing and Communications (Education Ministry of China), University of Electronic Science and Technology of China, China

We propose and experimentally demonstrate a gain-enhanced CO sensor using an In/ZnO-functionalized D-shaped erbium-doped active fiber Fabry–Pérot cavity. The sensor exhibits a logarithmic response over CO concentrations from 100 ppb to 1000 ppm, with a sensitivity of 0.165 pm/log(ppb) and an estimated limit of detection of 0.27 ppm.

ACP2026-0715-73

Real-Time Localization of Lightning Strike on Transmission Lines Based on State of Polarization

Huan Yang[1,2], Zhiliang Wei[1,2], Chenhui Wang[1,2], Xiang Li[1,2], Tianye Huang[2], Hanbing Li[1], Ming Luo[1], Jie Li[1], Ying Qiu[1*]

1.State Key Laboratory of Optical Communication Technologies and Networks (OCTN) China Information and Communication Technologies Group Corporation (CICT), China; 2.School of Mechanical Engineering and Electronic Information China University of Geosciences (Wuhan), China;

An FPGA-based state-of-polarization system enables real-time lightning localization over long-distance optical links. Controlled magnetic-field and OPGW current-pulse tests yielded mean deviations below 0.3%; repeated 80.586-km measurements showed a 0.04-km standard deviation, confirming stable online operation.

ACP2026-0722-2

Eye-Inspired Structural Recognition for Pipeline Leak Detection Using Distributed Acoustic Sensing

Zhichao Zeng[1], Baoqiang Yan[2], Keqing Zhang[1], Cunzheng Fan[1*], Zhijun Yan[1], Qizhen Sun[1]

1.Huazhong University of Science and Technology, China; 2.Wuhan Textile University, China

This study presents a pipeline leak detection method using distributed acoustic sensing. The method combines candidate prescreening with a eye-inspired structural recognition process to enhance leak related time frequency features. It distinguishes leakage from background and transient noise, achieving a recognition accuracy of 97.2%

ACP2026-0722-7

Horn-Enhanced Highly Sensitive and Directional Fiber-Optic Ultrasound Sensor

Zhi Zhang[1], Zongjing Li[2], Liangye Li[3], Xuhao Fan[4], Dongchen Xu[1], Geng Chen[1], Hao Li[1*], Wei Xiong[2*], Qizhen Sun[1]

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A horn-enhanced fiber-optic ultrasound sensor with high sensitivity and directivity is demonstrated. The sensor achieves a sensitivity of 70.3 mV/kPa and a −6dB full angular width of 34.3°.

NP2: Microwave Photonic Devices and Systems

ACP2026-0422-1

Photonic-Electronic Co-Design for Decoupling the Linearity-CSPR Deadlock in D-Band Fiber-Wireless Links

Jiongbin Deng[1], Jia Ye[1*], Ningyuan Zhong[1], Peng Li[1], Xihua Zou[1], Lianshan Yan[1]

1.Southwest Jiaotong University, China

We investigate the fundamental linearity-CSPR conflict in self-coherent D-band fiber-wireless links. By employing tone reservation to relax Kramers-Kronig carrier-power constraints, our 126-GHz experiment significantly lowers the required CSPR, achieving robust 26.91-Gbps data transmission.

ACP2026-0616-4

Experimental Demonstration of a Photonics-Assisted mmWave ISAC System Using CE-LFM-OTFS Waveform

Heng Lin[1], Yanyi Wang[1*], Yingxiong Song[1], Jianjun Yu[2]

1.Key Laboratory of Specialty Fiber Optics and Optical Access Networks, Shanghai University, China; 2.Key Laboratory for Information Science of Electromagnetic Waves, Fudan University, China

We experimentally demonstrate a photonics-assisted mmWave ISAC system using a CE-LFM-OTFS waveform, embedding a 2-GBaud 16-QAM OTFS signal into a 4-GHz LFM carrier to simultaneously achieve 3.413-Gbit/s communication and 3.75-cm sensing resolution in practical measurements.

ACP2026-0623-4

Wideband Microwave Stepped-Frequency Chirp Signal Generation Using an Optical Counter Frequency-Shifting Loop

Yudi Li[1], Chunlei Guo[1], Cong Ma[1*], Zhijian Zhang[2], Xiangchuan Wang[2*], Shilong Pan[2]

1.Dezhou University, China; 2.Nanjing University of Aeronautics and Astronautics, China

A wideband microwave stepped-frequency chirp (SFC) signal generation method is proposed based on an optical counter frequency-shifting loop. Experimentally, a coherent SFC signal spanning 17.9–33.7 GHz with a 400 MHz frequency step is generated.

ACP2026-0625-3

Conditional Diffusion Channel Surrogate Model for End-to-End Optimization in Photonics-Aided Terahertz Communication System

Xiande Lin[1], Zhanjiang Wang[1], Cunqiang Song[1], Feixiang Zhang[1], Shuhui Zhou[1], Jianguo Yu[1*]

1.Beijing University of Posts and Telecommunications, China

We propose and experimentally demonstrate a single-step consistency distilled conditional diffusion channel surrogate model for end-to-end photonics-aided THz communications. It precisely captures complex channel distortions and provides high-fidelity gradients for joint transceiver optimization, achieving 3.5 Gbit/s capacity gain and 4.2 dB shaping gain at 320 GHz.

ACP2026-0626-5

High-Speed Parallel Photonic ADCs Enabled by Mode-Multiplexed Dual-Output Modulator

Peilin Li[1], Na Qian[1*], Rui Zhang[1], Yinfu Liu[1], Gengle Han[1], Gangqiang Zhou[2], Jing Wang[1], Weiwen Zou[1]

1.Shanghai Jiao Tong University, China; 2.Zhejiang Lab, China

We propose a balanced photonic ADC based on high-uniformity mode-multiplexed dual-output modulators. The two-channel ADC achieves 7.04/7.08-bit ENOBs, a maximum 0.42-dB gain imbalance and 0.58° phase error within 40-GHz input bandwidth.

ACP2026-0628-14

Atomic-Clock-Level Stabilization of Optical Frequency Division via Photothermal Locking

Haocheng Ke[1], Jiahao Hu[1], Heng Zhou[1]

1.University of Electronic Science and Technology of China, China

We stabilizes a fiber Brillouin laser-based two-point optical frequency division system via photothermal feedback, producing a 10 GHz signal with phase noise of -109 dBc/Hz @100 Hz and Allan deviation of 3.4×10^{-13} @1 s.

ACP2026-0630-103

Interleaved Spectral Reshaping forKerr-Microcomb Photonic Signal Processing

Qiao Cheng[1], Zhihui Liu[1*], Yuhan Xie[2], Chengrui Wang[1], Yunping Bai[1*], Xingyuan Xu[1]

1.Beijing University of Posts and Telecommunications, China; 2.China Academy of Industrial Internet, China

We propose interleaved spectral reshaping for dense Kerr microcombs, reducing required dispersion and mitigating RF power fading, offering a scalable and integrable route to high-speed photonic signal processing.

ACP2026-0630-125

A Broadband 1.0-mm Coaxial-Connector-Based Photodetector Module with RF Output Bandwidth Beyond 110 GHz

Tianyu Long[1,2], Beixiao Zhu[1], Linze Li[1,2], Baile Chen[1*]

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A broadband modified uni-travelling-carrier photodiode (MUTC-PD) module based on a 1.0-mm coaxial connector is demonstrated, achieving an RF output power bandwidth beyond 110 GHz. Both passive transition characterization and active photodiode module measurement are performed.

ACP2026-0630-30

Amplifier-Cutoff-Enabled 300-GHz IM/DD Photonic THz VSB Fiber-Wireless Transmission

Dayu Shi[1], Weiqi Lu[1], Yuhao Fang[1], Puzhen Yuan[1], Haojie Zhu[1], William Shieh[1*]

1.Westlake University, China

We propose and experimentally demonstrate a dispersion resilient 300-GHz intensity-modulation/direct-detection (IM/DD) photonic THz fiber-wireless system based on amplifier-cutoff-enabled THz vestigial sideband (VSB) formation, achieving over 100 Gb/s datarate after 50-km fiber and 1-m wireless transmission.

ACP2026-0630-37

Performance Enhancement of Photonics-Assisted Terahertz Systems via NTF-Based Adaptive Bit-Power Loading DSM

Cunqiang Song[1], Zhanjiang Wang[1], Xiande Lin[1], Feixiang Zhang[1], Shuhui Zhou[1], Jianguo Yu[1*]

1.Beijing University of Posts and Telecommunications, China

We propose a DSM scheme that employs adaptive bit-power loading based on the frequency response of the noise transfer function (NTF). The scheme was successfully validated through B2B transmission, as well as hybrid transmission over a 10 km SSMF link and a 10 m wireless link in a 320 GHz photonics-assisted terahertz communication system. The experimental results show that, compared to conventional schemes, the proposed scheme achieves a 7.8\% improvement in spectral efficiency and, at the HD-FEC threshold of 3.8×10^-3, provides a gain of 0.3 dB in receiver sensitivity.

ACP2026-0630-48

Generation of Programmable Ultra-Broadband Optical Chaos via Chaos-Driven Electro-Optic Comb and Spectral Slicing

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We demonstrate a programmable ultra-broadband optical chaos architecture that drives an electro-optic comb with a chaotic microwave signal, achieving 543.8 GHz single-channel optical chaos and enabling programmable parallel chaotic channel generation.

ACP2026-0701-16

Mitigating Dispersion-Induced Power Fading in 200-GHz Fiber-Wireless Links by Injection-Locked Direct Detection

Yijun Guo[1], Xuguang Zhang[1], Yunhao Zhang[1], Bitao Shen[1*], Linshan Yang[1], Minglu Li[1], Luyu Wang[2], Tianyu Long[2], Lei Wang[3], Baile Chen[2], Xingjun Wang[1*], Haowen Shu[1*]

1.State Key Laboratory of Photonics and Communications, School of Electronics, Peking University, China; 2.School of Information Science and Technology, ShanghaiTech University, China; 3.Peng Cheng Laboratory, China

We demonstrate injection-locked direct detection to mitigate dispersion-induced power fading in 200-GHz fiber-wireless links. A theoretical model is developed to reveal the fading. Experimentally, we achieve 120-Gbps signal transmission over 20-cm wireless and 15-km fiber link.

ACP2026-0701-32

Towards Non-Line-of-Sight Terahertz Physical-Layer Security Communication Using a Cyclic-Embedded Chaotic Encryption Paradigm

Qing Zhong[1], Jiao Zhang[2*], Min Zhu[1*], Zhigang Xin[1], Zhiruo Guo[3], Jianxin Ren[3], Mingzheng Lei[2], Junjie Ding[2], Yuancheng Cai[2], Bingchang Hua[2], Yucong Zou[2], Jianjun Yu[4]

1.Southeast University, China; 2.Purple Mountain Laboratories, China; 3.Nanjing University of Information Science and Technology, China; 4.Fudan University, China

We demonstrate secure non-line-of-sight terahertz transmission at 340 GHz using an embedded cyclic chaotic system for data encryption, achieving 150 Gb/s, a key space of 10124, and up to 100% data scrambling.

ACP2026-0701-70

CNN-TCN-Attention-Based Temperature Demodulation for Multi-Notch-Depth Microwave Photonic Sensing

Jinke Wang[1], Lin Gui[1], Yue An[1]

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This paper proposes a notch-depth-conditioned CNN-TCN-Attention temperature demodulation model. The experimental data cover four notch depths of 8.1, 18.3, 18.6, and 25.1 dB,the final model achieves a test-set RMSE of 1.443 °C.

ACP2026-0708-5

High-Gain Photonic RF Repeater Based on Sideband Amplification Injection Locking in Optically Injected Semiconductor Lasers

Xiaolong Zhao[1], Jin Li[1], Tao Pu[1*], Jilin Zheng[1], Hua Zhou[1], Haoming Li[1]

1.Army Engineering University of PLA, China

A high-gain photonic RF repeater based on sideband amplification injection locking (SAIL) in optically injected semiconductor lasers is proposed and experimentally demonstrated.

The system achieves arbitrary frequency up/down conversion across C-, Ku-, and Ka-bands with conversion efficiency exceeding −3 dB. The SAIL-induced electrical gain exceeds 37 dB across all bands, reaching up to 49.5 dB for Ka-band signals. A 20 Msymbol/s BPSK signal and a 10 Msymbol/s QPSK signal are successfully processed with error-vector magnitude (EVM) values below 6.28 % and 8.79%, respectively. The scheme requires only a single low-frequency RF source and five semiconductor lasers, offering a compact, low-power solution for reliable satellite communication links.

ACP2026-0713-20

A Low-complexity Broadband Photonic 2D Phased Array for Simultaneous Multi-beamforming

Shilong Chen[1*], Xue Lan[1], Zhiyuan Yang[1], Xinpeng Wang[1], Haoyan Xu[1], Feifei Yin[1], Kun Xu[1], Yitang Dai[1*]

1.Beijing University of Posts and Telecommunications, China

A photonic broadband 2D phased array receiver is proposed, utilizing channelization and dimension compression to enable simultaneous multibeam reception while drastically reducing control and structural complexity. Experimentally, simultaneous multibeam forming is demonstrated using a 4×4 array over within 6–10 GHz.

ACP2026-0714-55

Microwave Photonic Common-Path TDM Stepped-Frequency Ranging System Based on Serrodyne Modulation

Yufei Fu[1],Jiazhen Cai[1], Liangshun Zhao[1], Xinlu Gao[1*], Zhennan Zheng[1], Shanguo Huang[1]

1.Beijing University of Posts and Telecommunications, China

This paper presents a common-path coherent ranging system utilizing Serrodyne phase modulation and TDM stepped-frequency. Overcoming laser nonlinearity, environmental noise, and intermodulation distortion, both simulations and experiments validate this robust high-SNR microwave photonic ranging architecture.

ACP2026-0715-37

A Backside-Illuminated 224-Gb/s InGaAs/InP Photodetector Chip for Short-Reach Optical Interconnects

Peng Li[1]

1.Southwest Jiaotong University, China

We demonstrate a backside-microlens-assisted InGaAs/InP vertical PIN photodetector with chip-package co-design, achieving 49.4-GHz bandwidth, 0.667-A/W responsivity, 0.38-nA dark current, and 226.875-Gb/s PAM4 transmission, offering a promising solution for 224-Gb/s-class optical receivers.

ACP2026-0715-55

Hybrid GA-SA Phase Modulation Design for SBS Suppression in High-Power Narrow-Linewidth Lasers

Guangtai Zou[1], Guoqing Pu[1], Mengyue Shi[1*], Weisheng Hu[1], Lilin Yi[1*]

1.Shanghai Jiao Tong University, China

A hybrid genetic algorithm and simulated annealing approach optimizes multi-frequency phase-modulated signals to suppress stimulated Brillouin scattering in high-power narrow-linewidth fiber lasers, achieving a highthreshold with enhanced spectral flatness and convergence stability.

ACP2026-0721-6

A Hybrid Frequency-To-Time and Phase Mapping Approach for Microwave Frequency Measurement

Jian Zhang[1], Lei Shan[1], Rui Ma[2], Chongjia Huang[1*], Erwin H. W. Chan[3*], Shengbao Wu[1], Xinlun Cai[2], X. Steve Yao[1]

1.Hebei University, China; 2.Sun Yat-sen University, China; 3.Charles Darwin University, Australia

A hybrid frequency-to-time and phase mapping approach using a tunable TFLN microring resonator enables accurate microwave frequency measurement from 2 to 12 GHz, achieving ±3 MHz error and 10 μs measurement time.

ACP2026-0722-9

Demonstration of DSCM 300-GHz THz Signal Transmission over AR-HCF

Shengze Xu[1], Xuemeng Hu[1,2], Zebang Pi[1], Shuo Qin[1], Xiang Li[2], Ming Luo[1], Yunlong Bai[3], Cheng Du[3], Jin Tao[1], Hanbing Li[1], Ziwei Wang[1*], Jie Li[1*]

1.China Information and Communication Technologies Group Corporation, China; 2.China University of Geosciences, Wuhan, China; 3.Ruiguang ICT Technology Co.,LTD., China

We demonstrate the photonics-aided 300-GHz THz transmission with digital subcarrier multiplexing signal over a 20-km AR-HCF, achieving a net data rate of 112 Gb/s with launch powers of up to 24 dBm.

NP3: Quantum Devices, Systems, Networking and Computing

ACP2026-0630-63

High-Extinction-Ratio On-Chip Optical Switch for Continuous-variable Quantum Key Distribution

Yuting Tian[1], Xuesong Xu[1], Yuanhao Li[2], Shiqi Zhang[2], Song Yu[1], Lei Zhang[2], Yichen Zhang[1*]

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We report a silicon photonic integrated optical switch for shot-noise-unit calibration in continuous-variable quantum key distribution system, featuring 50 dB extinction ratio, 1 dB insertion loss, and outstanding long-term switching stability.

ACP2026-0630-98

Silicon Photonic Quantum Autoencoder for Low-Overhead State Monitoring

Qiwei Wang[1], Baojie Hou[1], Haoran Ma[1], Qishen Liang[1], Zichao Zhao[1], Yueyang Liu[1], Huihui Zhu[1], Yuehai Wang[1], Jianyi Yang[1*]

1.Zhejiang University, China

We demonstrate reference-assisted single-portanomaly monitoring on a two-qubit silicon photonic quantum autoencoder, enabling low-overhead discrimination of channel anomalies and chip drift via trash-qubit coincidences, supported by 91.9% RHOM visibility and 97.64% state-preparation fidelity.

ACP2026-0701-54

Adaptive disaster prediction and recovery with enhanced reliability for cloud-edge collaborated quantum key distribution networks

Xinyu Wang[1], Jianghao Li[2*], Xiaoguo Cheng[1], Zhaopeng Xu[3], Xiaosong Yu[1]

1.Beijing University of Posts and Telecommunications, China; 2.Ocean University of China, China; 3.Pengcheng Laboratory, China

We propose an adaptive disaster recovery (DR) scheme for quantum key distribution networks. Results show that the success rate of DR can be improved by 90% with sacrificing recovery latency of less than 60%.

ACP2026-0714-11

Routing based on Purification Gain Evaluation in Entanglement Resource Limited Quantum Networks

Yucen Yuan[1], Xiaosong Yu[1*]

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Since entanglement purification incurs additional resource consumption and latency, a purification-gain-evaluation based routing algorithm (PGER) is proposed to avoid ineffective purification. Compared with benchmark algorithms, PGER effectively balances resource consumption and fidelity gain.

ACP2026-0714-36

Achieving Fairness for Entanglement Routing under Fidelity Constraints in Quantum Networks

Samin Shokrivahed[1], Qiaolun Zhang[1*], Massimo Tornatore[1], Giacomo Verticale[1]

1.Politecnico di Milano, Italy

Fair resource allocation in quantum networks is challenging because entanglement routing must allocate limited link-generation capacity and quantum memory under probabilistic swapping, fidelity (entanglement quality) constraints, and purification (improving entanglement quality by consuming more pairs) overhead. As a result, requests spanning long or noisy paths are inherently harder to serve, as they have lower swapping success probability, often need purification, and consume more entanglement per usable end-to-end pair. Since previous studies on fairness in quantum networking do not account for the resource cost of meeting fidelity constraints, the problem of how fairness can be guaranteed under fidelity constraints remains open. In this work, we address this gap by proposing a new two-stage fairness-aware ER framework. We first generate, for each request, candidate strategies for (i) routing, (ii) purification (rounds of purification per link), and (iii) provisioning level (amount of resources assigned to the request). We then use an Integer Linear Programming (ILP) model to select one strategy per request under shared link and memory constraints. We measure fairness through the utility loss of each request, defined as the gap between its selected generation rate and its best achievable generation rate. This evaluates fairness relative to each request's own achievable performance, separating allocation unfairness from physical limitations due to path length, swapping loss, and purification overhead. Numerical results show that the proposed framework provides tunable fairness–efficiency trade-offs, allowing network operators to balance fairness against throughput, resource allocation, or worst-case performance.

ACP2026-0714-7

Hollow-Core-Fiber-Enabled Repetition-Rate Stabilization of Soliton Microcombs in a Silicon Nitride Microring Resonator

Zhaoyu Chen[1], Lilu Wang[1], Zihang Huang[1], Yunru Fan[1], Wenwen Cui[2], Yu Qin[3], Limin Xiao[3], Yichun Shen[4], Yong Geng[1*], Kun Qiu[1], Qiang Zhou[1*]

1.University of Electronic Science and Technology of China, China; 2.Tianfu Jiangxi Laboratory, China; 3.Fudan University, China; 4.Zhongtian Technology Advanced Materials Co., Ltd, China

We demonstrate efficient repetition-rate noise suppression of Kerr microcombs using a hollow-core-fiber-based unbalanced Michelson interferometer (HCF-UMI). Benefiting from the reduced environmental sensitivity and chromatic dispersion of the hollow-core fiber delay line, the proposed approach suppresses long-term repetition-rate fluctuations from 8.68 kHz to 368 Hz compared with a conventional solid-core fiber implementation, achieving an approximately 20-fold improvement in repetition-rate stability.

ACP2026-0715-113 **Industry Innovation Nomination**

All-Optical Suppression of Exciton Fine-Structure Splitting in a Semiconductor Quantum Dot under Continuous-Wave Two-Photon Resonant Excitation

Zihao Liu[1,2], kunyue Li[1,2], Jiawei Yang[1,2*], Xuan Pu[1,2], Ying Yu[1,2*], Siyuan Yu[1,2]

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We suppress quantum dot fine-structure splitting via optical Stark effect under continuous-wave two-photon excitation, reducing it to 0.26 μeV. This all-optical approach holds promise for realizing high-fidelity entangled photon sources without external fields.

ACP2026-0715-2

A Timing Exposure Mitigation Algorithm Based on Path Synchronization for Entanglement Distribution Services in Quantum Networks

Zihao Wang[1], Xiaosong Yu[1*], Yongli Zhao[1], Liquan Chen[2]

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This paper proposes a Path Synchronization Algorithm (PSA) for long-lived entanglement distribution services in quantum networks, mitigating waiting-induced fidelity degradation while revealing an efficiency–fidelity tradeoff.

ACP2026-0715-201

Power-Spectral-Density-Aware Noise Modeling in Quantum-Classical Coexistence Systems

Yongmei Sun[1*], Yuting Wang[1], Yaoxian Gao[1]

1.Beijing University of Posts and Telecommunications, China

This paper proposes a power-spectral-density-aware (PSDA) noise model for quantum-classical coexistence systems, incorporating the PSD of classical signals into nonlinear noise evaluationand reducing relative error in achieveabletransmission distance from 26.06% to1.37%.

ACP2026-0715-30

Towards coherent interaction between electron qubits on solid neon via a cavity bus

Xinyuan Rong[1], Zhicheng Liu[1], Ruiming Liu[1], Zilei Zhang[1], Wang Jiang[1], Xinhao Li[1*]

1.Westlake University, China

We report preliminary effortson coupling two electron qubits on solid neon via a superconducting cavity bus.

ACP2026-0715-61
High-Rate 1×4 Quantum Access Network Based on Passive Optical Network Architecture
Yan Pan[1], Jiale Mi[2], Heng Wang[1], Xuesong Xu[2], Jie Yang[1,2], Yang Li[1], Wei Huang[1], Yichen Zhang[2*], Bingjie Xu[1*]
1.National Key Laboratory of Security Communication, Institute of Southwestern Communication, China; 2.State Key Laboratory of Information Photonics and Optical Communications, Beijing University of Posts and Telecommunications, China
We demonstrate a high-rate 1×4 discrete-modulated continuous-variable quantum access network based on passive optical network architecture, achieving an average per-user secret key rate of 21.48 Mbps over an 11-km fiber link.

ACP2026-0715-78
A Prediction-Assisted Risk-Aware Adaptive K-Shortest-Path Routing for QKD Networks
Yuanchen Hao[1*], Qi Zhao[1], Jianjun Tang[1]
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To mitigate bottleneck depletion in trusted-relay QKD networks, PRAK-QKD combines inventory prediction, K-shortest-path generation, and two-stage risk-aware selection, yielding the lowest average comprehensive routing cost across seven request arrival intensities, 27.41% below Key-Aware OSPF overall.

ACP2026-0721-1
Correlated Photon Pairs Generation via Cascaded Forward SHG and Backward SPDC Processes
Hongyu Cai[1], Yunru Fan[1], Dan Xu[1], Yanyu Wei[1], Hao Li[2], Lixing You[2], Guanggan Guo[1], Qiang Zhou[3]
1.University of Electronic Science and Technology of China, China; 2.Shanghai Institute of Microsystem and Information Technology Chinese Academy of Sciences, China; 3.University of Science and Technology of China, China
We demonstrate the generation of correlated photon pairs via cascaded forward SHG and backward SPDC processes. By integrating the periodically poled lithium niobate (PPLN) waveguide with a reflection structure, we obtain a coincidence-to-accidental ratio (CAR) of approximately 1000 at a pump power of 2 mW, with single-side photon count rates of 0.80 MHz and 0.75 MHz, and a coincidence count rate of approximately 180 kHz. Our results pave the way for the development of practical, high-signal-to-noise-ratio, and long-distance quantum communication networks.

NP4: Materials, Nanofabrication, and Characterization Techniques

ACP2026-0612-1
End-to-End Optimization of Metasurface Encoders for Snapshot Near-Infrared Hyperspectral Imaging
Jiayu Di[1,2], Zhenming Yu[1,2*], Qifan Liu[1,2], Yanfeng Liu[1,2], Wei Zhang[3], Kun Xu[1,2]
1.Beijing University of Posts and Telecommunications, China; 2.Xiong'an Aerospace Information Research Institute, China; 3.Hebei Xiong'an Transportation Investment Co.,Ltd, China
We propose an end-to-end optimization framework for 700–1000 nm snapshot near-infrared hyperspectral imaging with 31 spectral channels. A differentiable surrogate model is trained using 500 informative hard samples selected from 2000 FDTD-generated C4-symmetric metasurface structures, together with full-dataset samples to preserve the physical structure–spectrum mapping. The trained surrogate is embedded into the reconstruction pipeline, enabling joint optimization of the metasurface encoder and neural reconstruction network under reconstruction loss and spectral-correlation regularization. Simulation results show that the optimized system achieves a PSNR of 35.60 dB with a spectral correlation coefficient of 0.21, demonstrating the effectiveness of task-driven metasurface encoder design for compact snapshot NIR hyperspectral imaging.

ACP2026-0627-6
Magnetic induction intensity sensor based on accidental quasi-bound states in the continuum
Chengbo Du[1], Donghe Sheng[1], Huiping Tian[1*]
1.Beijing University of Posts and Telecommunications, China
We propose a magnetic induction intensity sensor with a large asymmetry parameter base on accidental quasi-bound states in the continuum. The sensor has high quality-factor and high figure of merit.

ACP2026-0628-9
Data-Efficient Speckle Spectral Reconstruction via Reinforcement Learning-Assisted Sample Re-Selection
Ruiying Yang[1], Sitong Zhou[1*]
1.Beijing University of Posts and Telecommunications, China
Wepresent a data-efficient fiber speckle spectral reconstruction method based on reinforcement learning (RL)-agentassisted labeled sample selection. A ViT-based end-to-end network maps speckle images to spectra, while the RL-agent selects informative samples using reconstruction uncertainty, error, and spectral characteristics. Compared with the end-to-end baseline, the RL-agent-assisted strategy reduces RMSE and SAM by 11.13% and 11.03%, respectively, improving reconstruction accuracy and spectral similarity under the same acquisition budget.

ACP2026-0630-105

A Metallic Quasi-BIC Dual-rod Metasurface for High-Sensitivity Label-Free Biosensing

Chengcheng Huang[1], Zhengtai Ma[1], Yiyang Xie[1*]

1.Beijing University of Technology, China

Plasmonic metasurface sensors have garnered substantial interest for label-free, real-time biochemical detection; however, their practical deployment is frequently constrained by intrinsic Ohmic losses in metals and concomitantly low quality (Q) factors, which together curtail the achievable resolution and sensitivity. Here, we propose and demonstrate a Au dual-strip metasurface that supports quasi-bound states in the continuum (QBIC) for the refractive-index sensing of sodium chloride (NaCl) solutions. The metasurface unit cell comprises two vertically oriented, asymmetric rods. By intentionally breaking the in-plane symmetry, the otherwise optically dark bound state in the continuum is converted into a leaky quasi-BIC mode. When the metasurface is immersed in NaCl solutions of varying concentrations, the resonance wavelength exhibits a systematic redshift with increasing refractive index, yielding a sensitivity of 227.9 nm/RIU. Our findings demonstrate that metallic QBIC metasurfaces provide a straightforward yet high-performance pathway for liquid-phase biochemical sensing. With further structural optimization and surface functionalization, this platform holds promise for applications in biomolecular assays, water-quality monitoring, and lab-on-a-chip systems.

ACP2026-0701-222

A Multi-Parameter Surface Measurement Method Based on Dual-Channel Signal Fusion

Weimin Lou[1], Huan Chen[1*], Peng Yang[1], Kaiqing Chen[1], Xinyi Huang[1,2], Bosong Duan[3]

1.Zhejiang Institute of Quality Sciences, China; 2.China Jiliang University, China; 3.Zhejiang University, China

A dual-modal fusion method combining coaxial light-field imaging and laser scanning enables non-contact measurement of cement test blocks, simultaneously acquiring 2D profiles and 3D flatness with errors within 0.29 mmand 0.02 mm.

ACP2026-0701-52

Microscopic conjugate imaging and amplitude gradient phase retrieval for physical phase decoupling and reconstruction of double-sided wafers

Tuo Li[1*], Tianyu Gao[1], Lei Liang[1], Kaili Ren[1]

1.Xi'An University of Posts & Telecommunications, China

The microscopic conjugate imaging and amplitude gradient phase retrieval method is an effective solution for double-sided objects. However, when signals from the front and back surfaces overlap, the performance of traditional phase retrieval methods will sharply decrease due to defocus noise. Ptychography can reconstruct 3D information, but it is slow because it needs many images. To address this issue, we propose a method that uses only two intensity images to separate and reconstruct the phase of both surfaces. The performance of this method is much better than traditional methods because it reduces data and stops interference between layers. Therefore, this method is useful for double-sided objects, and a series of simulations and experiments demonstrates its effectiveness.

ACP2026-0715-104

Curvature-Engineered Imbalanced Silicon Nitride Slot Microring for Liquid-Phase Refractometric Sensing

Zida Zheng[1], Yinyin Song[2], Yuxiang Zeng[2], Lan Li[1*]

1.Westlake University, China; 2.Westlake Institute for Optoelectronics, China

Bending a slot waveguide into a microring creates rail inequivalence and mode redistribution. We introduce an imbalanced SiN slot microring with unequal rail widths to compensate curvature effects, achieving 330nm/RIU sensitivity and demonstrating rail-width imbalance as an effective design parameter.

ACP2026-0715-89

In-Situ Fabrication of All-Dielectric Metasurfaces on Optical Fiber End Facets

Mingke Jin[1], Jingyi Tian[1*]

1.Westlake University, China

We report an in-situ fabrication process for integrating all-dielectric silicon metasurfaces onto optical fiber end facets using EBL and ICP-RIE with custom holders, achieving high-fidelity nanostructures and high-Q BIC resonances in the C-band.

ACP2026-0716-6

A Compact FTIR System for Rapid Screening of Toxic Precursors in Plastic Recycling

Wei Luo[1], Chaoqia Wei[1], Suwan Sun[1], Qiankun Li[1], Xinbo Di[1], Xueying Sun[1], Liangliang Zhang[1], Chengbo Mou[1], Hairun Guo[1*]

1.Shanghai University, China

We set up a compact Fourier transform infrared spectrometer with commercial-grade performance on a 30 cm×30 cm breadboard. The system enables characteristic functional group detection and presorting of three macroscopic polymer materials.

Demo Zone

ACP2026-0701-20	**Demonstrating Agentic AI for Intent-Aware Soft Failure Recovery in Optical Networks**
ACP2026-0801-1	**First Real-Time Demonstration of 6G Holographic Immersive Communications over an All-Optically Integrated Photonic Terahertz System**
ACP2026-0801-2	**Interactive Demonstration of an 8K Super Multi-View Light Field 3D Display with 234 Directional Views for Glasses-Free Visualization**
ACP2026-0801-3	**A Demonstration of Underwater Multi-Robot Cooperative Localization Enabled by Optical Wireless Links**

ACP2026-0701-20
Demonstrating Agentic AI for Intent-Aware Soft Failure Recovery in Optical Networks
Mehrad Vaezi[1*], Qingyi Guo[1], Yujiao Hao[1], Bowen Ding[1], Mahdi Hemmati[1], Yuren You[1], Christopher Janz[1]
1.Huawei Canada, Canada
We demonstrate an intent-driven multi-agent system for autonomous soft failure recovery. It integrates knowledge graph-driven diagnosis with digital twin validation to achieve automated service restoration on a real testbed.

ACP2026-0801-1
First Real-Time Demonstration of 6G Holographic Immersive Communications over an All-Optically Integrated Photonic Terahertz System
Jiao Zhang[1], Yucong Zou[1], Min Zhu[2], Hongfei Xia[3], Yanbin Liu[3], Bingchang Hua[1], Mingzheng Lei[1], Yuancheng Cai[1], Junjie Ding[1], Ping Lu[3], Yongming Huang[1]
1.Purple Mountain Laboratories, China; 2.Southeast University, China; 3.ZTE Corporation, China
The first photonic terahertz holographic communication prototype is demonstrated, featuring an all-optical architecture with 10-200 Gbps and sub-50 ms latency, enabling real-time holographic transmission and immersive 6DoF multimodal interaction via edge-cloud rendering.

ACP2026-0801-2
Interactive Demonstration of an 8K Super Multi-View Light Field 3D Display with 234 Directional Views for Glasses-Free Visualization
Yuhang Zhao[1]
1.Beihang University, China
We demonstrate a super multi-view light field 3D display with 234 directional views over a 45° viewing angle on an 8K LCD, achieving a balanced trade-off among spatial resolution, angular sampling, and glasses-free 3D visualization.

ACP2026-0801-3
A Demonstration of Underwater Multi-Robot Cooperative Localization Enabled by Optical Wireless Links
Yifan Peng[1], Qihang Liu[1], Binbin Zhu[2], Changyuan Yu[3], Zixian Wei[3*], Junfeng Wu[1*]
1.The Chinese University of Hong Kong, Shenzhen, China; 2.Shenzhen Hua Chuang Chip Lighting Co., Ltd., China; 3.Hong Kong Polytechinic University, Hong Kong, China
We demonstrate an underwater multi-robot prototype integrating optical communication with visual-inertial SLAM for low-latency exchange of states, observations, and maps through transceiver exhibits, computer-based node emulation, and recorded underwater tests in an interactive onsite demonstration.

Note

Note



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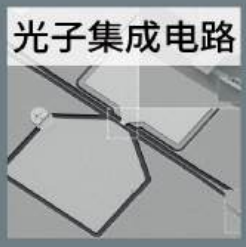


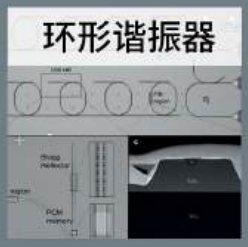
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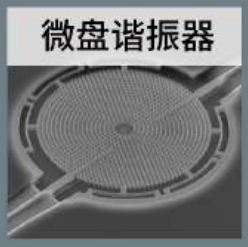


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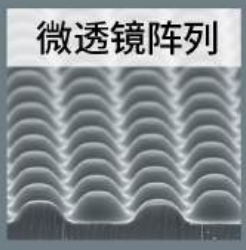


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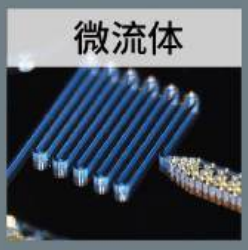


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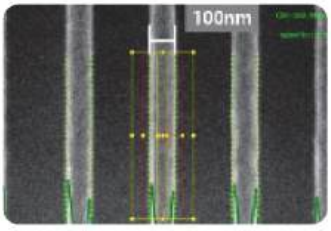
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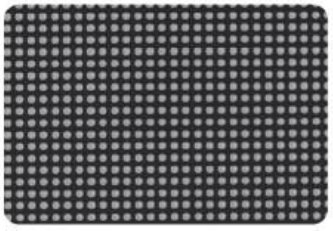
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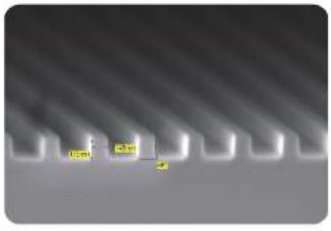
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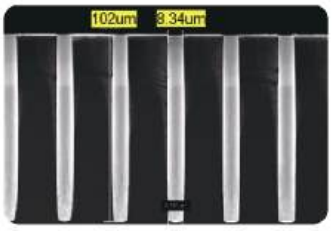
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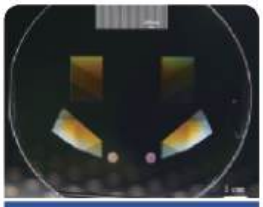


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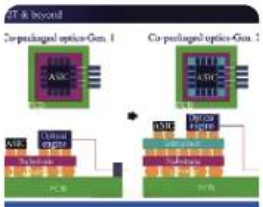


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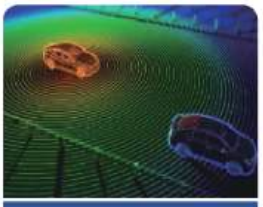
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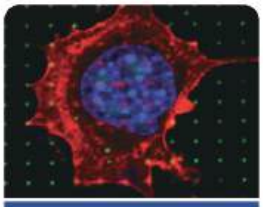
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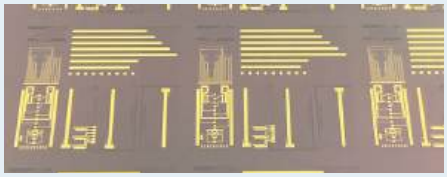
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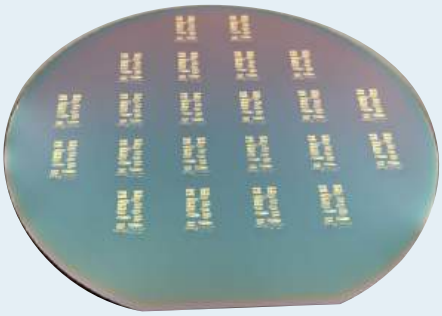
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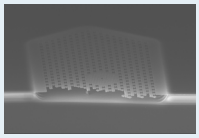


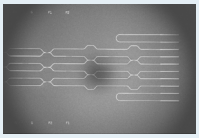
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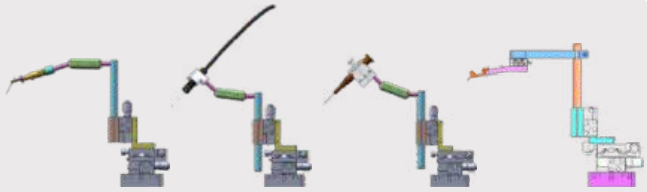
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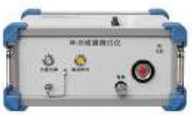
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1.6T误码分析仪





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电　　话：028-85957437 18382435575
公司网址：www.sufast-tech.com
公司邮箱：info@sufastech.com

扫码关注

上海光织科技有限公司

公司简介

上海光织科技专注于为大模型、大数据、大算力提供先进光连接解决方案。公司坐落于上海闵行大零号湾科创核心区，拥有新型光器件、高速光路板及三维光子互连芯片生产线与完整检测验证能力，持有 20 余项发明专利，牵头制定多项国际标准，多芯少模 光纤器件与光路板技术达国际先进水平。公司服务国家重大战略，为高校及科研院所提供定制化方案，产品出口美、英、日等国，致力于为全球算力基础设施提供高性能光互联支撑。



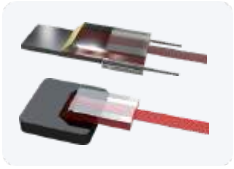
愿景：成为具有全球影响力的先进光连接方案制造商

使命：创新之光，织造未来

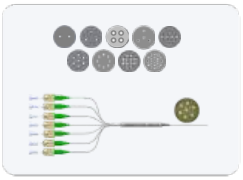
价值观：知行合一，以韧致精

核心业务及服务

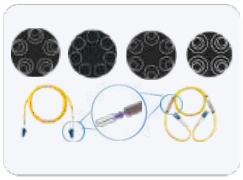
三维光子互连芯片



多芯光纤连接器



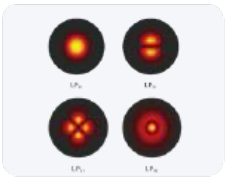
空芯光纤连接器



多芯MT-FA光组件



少模光纤



核竞心争业优势

- 核心技术自主可控：20 余项发明专利，覆盖空分复用、三维光子互连、高速光路板
- 产品达国际一流：多芯少模光纤复用解复用器件、光路板、三维光子互连芯片达到国际先进水平，填补国内空白 突破
- 电互联瓶颈：产品具备超高密度、超低时延、大带宽、低损耗，完美适配 AI / 大模型 / 超算的CPO（共封装光 学）需求
- 独有产线布局：自建6 英寸光路板、4 英寸三维光子互连芯片、空分复用光器件三大工艺线
- 完备检测验证：从芯片设计、材料、工艺到测试全链条闭环，品质与交付稳定性强
- 高安全、高自主：全流程自主可控，适配算力基础设施国产化刚需

公司电话：021-52960710

公司官网：www.optoweave.com

工作地址：上海市闵行区上海市闵行区剑川路930号D栋101

400-829-1996
www.lusterinc.com

LUSTER 凌云光
股票代码:688400

光电子集成芯片封测解决方案

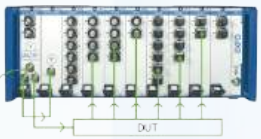
全波段高精度光无源器件测试系统

光电子集成芯片测试

- 支持 OESCLU 全波段扫描
- 高精度测量，结果稳定可靠
- 同步测量 IL/RL/PDL 等关键参数
- 亚皮米级波长分辨率，满足精细测试
- 业界首创多端口晶圆级边缘耦合
- 支持300mm晶圆测试



T500S可调扫描激光器



CTP10无源光器件测试平台



晶圆级边缘耦合测试平台OPAL-EC

全自动 3D 光刻耦合封装平台

光电子集成芯片封装

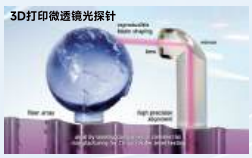


SONATA 1000 系列



REPRISE 1000 系列

- 无源耦合对准，高互联密度
- 实现任意模场之间低损耗连接
- 允许数十微米芯片贴装偏差
- 高可靠性，适合大批量自动化生产



WOP FemtoTGV 飞秒激光玻璃通孔改性系统

光电子集成芯片封装

- 玻璃厚度：≤1.1mm
- 样品尺寸：600mm*600mm
- 定位精度：±3um
- 内壁粗糙度：Ra≤80nm



玻璃通孔TGV等多种微加工



——凌云光——











凌云光（股票代码：688400）以光技术创新为基础，围绕机器视觉与光纤光学开展业务，致力于成为视觉人工智能与光电信息领域的全球领导者。公司曾获得一项国家技术发明一等奖和两项国家科学技术进步二等奖。公司战略聚焦机器视觉业务，坚持“为机器植入眼睛和大脑”，为客户提供可配置视觉系统、智能视觉装备与核心视觉器件等高端产品与解决方案。在光纤光学领域，面向科学通信、数据通信、电信通信、光纤激光、光纤传感五大应用方向提供高端光器件与仪器解决方案。

凌云光技术股份有限公司
北京市海淀区翠湖南环路13号院7号楼知识理性大厦

鹏城国家实验室
光纤通信与光电信息研究部

光纤通信与光电信息研究部 ABOUT US

光纤通信与光电信息研究部聚焦宽带通信和新型网络中光电子/微电子材料、芯片、器件、模块、光纤、系统、网络和核心基础设计软件等前沿热点技术和领域交叉技术的研发，研究**"摩尔时代/后摩尔时代"**面向信息传输、交换、处理、感知的芯片材料、工艺、集成、控制、系统架构、基础理论、信号处理等一系列颠覆性、引领性、支撑性技术及系统应用，引领未来学术方向，推动产业快速发展。

- 通信光电子芯片技术
- 高速光通信系统技术
- 光电融合网络技术与系统方向
- 前沿光子学方向

科研条件

"鹏城光网"重大科技基础设施是支撑高速光通信芯片、器件和系统研究的重大科学装置，基于P/EDA设计平台、异质异构光电子芯片工艺平台、高速封装平台和大容量光传输系统验证平台，为光通信速率、容量、距离、功耗等极限性能提供全技术链的研究和验证能力，该设施在深圳福田河套、南山西丽建设有拥有各类科研实验室场地7500余平方米，科研设备500余台(套)，具备完备的网络通信用芯片设计、加工制造、封装测试及系统验证全技术链的研究条件。

招聘岗位

岗位名称	岗位职责
光电芯片方向 研究员/副研究员/助理研究员/博士后	1. 微电子、光电子、半导体物理、集成电路等相关专业全日制博士学历。 2. 具备光电子芯片或数模/射频集成电路领域的深厚研发背景；熟悉从器件机理、工艺制备到系统测试验证的全链条开发流程。 3. 精通主流光电/电磁场仿真及EDA设计工具；具备完整流片（Tape-out）闭环经验者优先；能独立开展高速测试与数据分析。 4.以第一/通讯作者发表过本领域顶尖期刊/会议高水平论文；具备优秀的技术攻关与成果转化能力。 5. 具备优秀的跨学科协作与资源整合能力，能承担重大科研任务；英语读写及国际交流能力卓越。
光通信系统方向 研究员/副研究员/助理研究员/博士后	1.光学工程、微电子、电子科学与技术、半导体材料和物理电子学等相关专业全日制博士学历； 2.在光纤通信领域有研究经验，聚焦光器件、光系统架构、光信号处理等方向； 3.精通光纤通信系统设计、光器件仿真、高速光信号测试与分析，熟悉5G/6G光承载网、空芯光纤、空分复用光纤等前沿技术； 4.具备优秀的团队管理能力和跨学科协作经验，能够承担重大科研任务； 5.以第一作者或通讯作者发表顶尖期刊或会议论文，主导过国际标准/行业标准制定者优先； 6.具备较好的沟通、学习能力、英文写作能力等，具有团队合作精神。
光交换方向 研究员/副研究员/助理研究员/博士后	1.通信与信息系统、光学工程、微电子、电子科学与技术、半导体材料物理电子学等相关专业全日制博士学历； 2.具有高速光通信系统、光交换网络架构、密集波分系统等研究经历，或者光交换器件、光无源、有源器件等相关经历； 3.具备扎实的光通信及光网络基本知识或相关的光学理论基础； 4.具备优秀的团队管理能力和跨学科协作经验，能够承担重大科研任务； 5.以第一作者或通讯作者发表顶尖期刊或会议论文，主导过国际标准/行业标准制定者优先；
光通信设备/模块研发 高级工程师/工程师/助理工程师	1. 通信、电子、微电子、计算机等相关专业全日制硕士及以上学历； 2. 熟悉光纤通信、以太网/IP原理和光传输、光交换和光网络设备，有光通信和光网络产品/系统设计经验为佳； 3. 精通光通信和光网络的硬件/软件/芯片/网管中至少一项的设计开发技能； 4. 有大型光通信和光网络产品从需求分析、系统设计、开发测试到交付应用的产品研发全流程的经历者优先 5. 具备踏实负责的工作态度和良好的沟通协调能力，有较强的抗压能力。

福利待遇

全面落实相关人才待遇,高标准缴纳五险二金，优惠食堂和免费健身房，协助解决人才子女入学，可申请人才住房,提供年度健康体检，协助落户和接收人事档案，全方位解除人才后顾之忧。

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鹏城实验室 鹏城实验室招聘

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