

ACP 2021 — Agenda of Sessions

Sunday, 24 October

	Qingdao Room, 2F	Shenyang Room, 2F	Dalian Room, 2F	Changchun Room, 2F	Beijing Room, 2F	Shanghai Room, 2F	Wuxi/Guilin Room, 3F	Nanjing Room, 3F	Kaifeng Room, 3F
08:00–18:0	Registration, Lobby								
09:00–12:35			Workshop: AI Meets Photonics <i>(08:00–12:25)</i>	Workshop: Biophotonic Imaging Roadmap 2021 <i>(09:00–11:15)</i>	Workshop: Heterogeneous Photonic Integration on Silicon <i>(09:00–11:45)</i>	Workshop: Light: Science & Application Workshop in Quantum Photonics <i>(09:00–12:35)</i>		Forum: All Optical Service Networks for F5G <i>(8:30–12:35)</i>	Forum: Silicon Photonics Integration for beyond 800G Pluggable and Co-Packaged Optics applications: Opportunities and Challenges <i>(09:00–12:30)</i>
12:00–14:00	Lunch Break, Yi Café, 2F, Grand Tower								
14:00–18:30	Workshop: Microcavity Frequency Combs: From Physics to Applications <i>(begins at 13:00)</i>	Workshop: Space-division Multiplexing (SDM) <i>(ends 17:45)</i>	Workshop: Co-Integration of Photonics and Electronics <i>(14:00–17:55)</i>	Workshop: Biophotonic Imaging Roadmap 2021+Panel Discussion <i>(14:00–16:45)</i>	Workshop: Heterogeneous Photonic Integration on Silicon <i>(13:50–16:55)</i>	Workshop: Nonlinearity Compensation or Advanced Coded Modulation Schemes to Achieve Fibre's Ultimate Transmission Limit? <i>(13:00–18:00)</i>	Workshop: Novel Routines from Fibres to Transceivers	Forum: Next-Generation Optical Switching and Transmission Technologies for F5g And Beyond <i>(14:00–18:30)</i>	Forum: Future Artificial Intelligence Optical Network Toward 2030: Technologies and Applications <i>(13:00–18:15)</i>

Workshop and Forums

Workshops

Workshop 1: Microcavity Frequency Combs: from Physics to Applications

Workshop Time: 13:00–17:45, Sunday, 24 October Venue:

Qingdao Room, 2F

Organizers

Yunfeng Xiao, Peking Univ., China

Baicheng Yao, Univ. of Electronic Science and Technology of China, China

Heng Zhou, Univ. of Electronic Science and Technology of China, China

Description: Microcavity frequency combs is a hot frontier of photonic physics and a significant direction of optical technology in recent years. Its R&D will lead the future developments of wide applications ranging from integrated optics, precision measurements, astronomical observation, ultrafast communication, to smart sensing. In this workshop, we share the cutting-edge advances, enhance and broaden the combination of science and techniques of microcombs.

Speakers:

President: Baicheng Yao, Univ. of Electronic Science and Technology of China, China

13:00–13:25 Chee Wei Wong, Univ. of California at Los Angeles, USA

Topic: Microcavity frequency combs: precision ultrafast measurements and stabilization

13:25–13:50 Xu Yi, Univ. of Virginia, USA

Topic: Microcavity frequency combs in deterministic quantum regime

13:50–14:15 Shu-Wei Huang, Univ. of Colorado at Boulder, USA

Topic: Photonic frequency comb based on dissipative quadratic soliton

14:15–14:40 Qi-Fan Yang, Peking Univ., China

Topic: Fundamental coherence of optical microcombs

14:40–15:05 Wei-Qiang Xie, Shanghai Jiao Tong Univ., China

Topic: Ultralow-loss AlGaAs nanophotonics for low-power and scalable nonlinear photonics integrated circuits

15:05–15:20 Coffee Break

President: Heng Zhou, Univ. of Electronic Science and Technology of China, China

15:20–15:45 Lin Chang, Peking Univ., China

Topic: Ultra-narrow linewidth lasers and microcombs based on self-injection locking in integrated photonics

15:45–16:10 Benbo Xu, Huawei Ltd. Co, China.

Topic: Recent progress in multi-wavelength laser source solutions

16:10–16:35 Pacal Del’Haye, Max Plank Inst., Germany Topic: TBD

16:35–17:00 Victor Torres Company, Univ. of Chalmers, Sweden

Topic: Microresonators frequency combs in optical communications: challenges and opportunities

President: Yunfeng Xiao, Peking Univ., China

17:00–17:45 Plenary discussion

Workshop 2: Space-division Multiplexing (SDM)

Workshop Time: 14:00–17:45, Sunday, 24 October Venue:

Shenyang Room, 2F

Organizers

Georg Rademacher, National Inst. of Information and Communications Technology, Japan

Rui Zhou, Huawei, China

Juan Carlos Alvarado-Zacarias, Univ. of Central Florida, USA

Description: Space division multiplexing (SDM) in multi-mode and multi-core fibers has been a major topic in optical fiber communications research since the beginning of the last decade. SDM research aims at exploiting spatial diversity in optical transceivers, fibers, amplifiers, routers etc. to in-

crease the per-link transmission capacity while reducing cost, complexity, and eventually energy consumption.

This workshop intends to gather experts in the field to establish an overview of the current state of SDM research with a focus on:

- Integrated transceivers and components for SDM
- Advances in SDM fiber design, modeling and analysis of novel propagation effects
- An industry perspective on SDM

The workshop further aims at stipulating an open discussion between panelists and attendees on the challenges and opportunities envisaged in the deployment of massive parallel transmission systems.

Speakers:

President: Rui Zhou, Huawei, China

14:00–14:15 Shikui Shen, China Unicom, China Topic: China Unicom’s view on SDM technology

14:15–14:30 Tobias Fehenberger, ADVA Optical Networking, Germany

Topic: Integration in Space Division Multiplexed Systems: A Key Element to Commercial Success

14:30–14:45 Lin Zhang, Tianjin Univ., China Topic: SDM transmission systems and key devices

14:45–15:00 Juhao Li, Peking Univ., China Topic: Weak coupling FMF transmission systems

15:00–15:15 Lei Shen, YOFC, China

Topic: Challenges and solutions of SDM fiber in practical application

15:15–15:30 Ning Wang, China Mobile Research Institute, China

Topic: Potentials of SDM technology in fiber access networks

15:30–15:45 Pandelis Diamantopoulos, NTT, Japan Topic: Integrated Directly-Modulated Membrane Laser Transmitters for Short-Reach SDM Links

15:45–16:00 Coffee Break

Presider: Georg Rademacher, National Inst. of Information and Communications Technology, Japan & **Juan Carlos Alvarado-Zacarias**, Univ. of Central Florida, USA
16:00–16:15 Guilhem de Valicourt, Nubis Communications, USA

Topic: Highly parallel integrated transceivers

16:15–16:30 Nick Fontaine, Nokia Bell Labs, USA Topic: Multi-mode EDFAs

16:30–16:45 Rio Nagase, Chiba Inst. of Technology, Japan Topic: Connector technologies for MCF

16:45–17:00 Cristian Antonelli, Univeristy de l'Aquila, Italy Topic: Modelling of crosstalk in MCF

17:00–17:15 Peter Krummrich, TU Dortmund, Germany Topic: Mode coupling in high mode count MMF

17:15–17:30 Ruby SB Ospina, Univ. of Campinas, Brazil Topic: MDL estimation in SDM transmission experiments

17:30–17:45 Kazunori Mukasa, Furukawa Electric, Japan Topic: Ultra-high core count MCF

Workshop 3: Novel Routines from Fibres to Transceivers

Workshop Time: 13:45–18:00, Sunday, 24 October Venue:

Wuxi/Guilin Room, 3F

Organizers

Liangming(Ansion) Xiong, State Key Laboratory of Optical Fiber and Cable Manufacture Technology, China **Weisheng Hu**, Shanghai Jiao Tong Univ., China

Junjie Li, China Telecom Research Inst., Beijing, China

Description: Telecom operators and Internet companies are particularly sensitive to the price and ease of use of high-speed connection solutions or routines of optical transmission. To design and develop novel routines or solutions for access or datacenter optical networks at a low cost is very important and necessary in industry. This workshop will give some representative routines, involving in optical fiber, interconnects, IC and optical chips or components, tunable DBR lasers, transceivers, and DCI or access network solutions.

Speakers:

Presider: Weisheng Hu, Shanghai Jiao Tong Univ., China
13:45–14:08 Junjie Li, China Telecom Research Inst., Beijing, China

Topic: Chance and Challenge of 400Gb/s WDM in Backbone and Metro Networks

14:08–14:31 Yi Yu, Huawei Technologies Co., LTD.

Topic: Capacity and Flexibility Improvement for Next Generation Fixed Optical Networks

14:31–14:54 Sai Chen, Alibaba Group

Topic: High-speed Datacenter Optical Networks

14:54–15:17 Lei Zhang, State Key Laboratory of Optical Fiber and Cable Manufacture Technology, YOFC, China Topic: New Optical Fiber Connection Solutions for Datacenter

15:17–15:40 Qunbi Zhuge, Shanghai Jiao Tong Univ., China Topic: Capacity-approaching Design of Coherent Optical transceiver

15:40–15:50 Coffee Break

Presider: Junjie Li, China Telecom Research Inst., Beijing, China

15:50–16:13 Honglin Ji, The Univ. of Melbourne, Australia Topic: Advanced Optical Receivers for High-capacity Optical Interconnects

16:13–16:36 Ivan Zheng, Innolight Technology (Suzhou) LTD. Topic: TBD

16:36–16:59 Song Liang, Inst. of Semiconductors, Chinese Academy of Sciences 1.

Topic: High-speed Widely Tunable InP Based DBR Lasers 2.

16:59–17:22 Hui Wang, Citrus Technology, Shanghai, China Topic: IC Design Challenges for PAM4 Optical Interconnects 3.

17:22–17:45 Liangbo Wang, Yuanjie Semiconductor Technology, Co., Ltd, China 4.

Topic: InP Laser Status and Challenge for High Speed Optical Communication 5.

Presider: Liangming(Ansion) Xiong, State Key Laboratory of Optical Fiber and Cable Manufacture Technology, China 6.

17:45–18:00 Plenary discussion 7.

Workshop 4: AI Meets Photonics

Workshop Time: 08:00–12:25, Sunday, 24 October Venue:

Dalian Room, 2F

Organizers

Weiwen Zou, Shanghai Jiao Tong Univ., China

Shuiying Xiang, Xidian Univ., China

Jianji Dong, Huazhong Univ. of Science and Technology, China

Hongwei Chen, Tsinghua Univ., China

Description: The emerging brain-inspired AI technologies may outperform the traditional von Neumann computing scheme for some certain tasks, especially with the computation-burden tasks, e.g., image recognition, audio processing, deep learning, and much more.

The intersection of AI and photonics is now burgeoning for a new computing paradigm. It can combine both neuroscience information-processing capacity and unique properties of photonics, may offer a promising candidate to address the ever-growing computing-consuming scenarios with much lower power consumption.

This workshop shall shed light on how such merits can be combined, when such solutions may be affordable, and what advantages could be offered. Furthermore, current bottlenecks and technological limits shall be discussed. Especially, the workshop shall address such topics:

1. photonic feedforward neural network;
2. photonic convolutional neural network;
3. photonic neuromorphic computing;
4. photonic spiking neural network;
5. photonic reservoir computing;
6. Photonic ising machine;
7. Diffractive optical neural network.

Speakers:

Presider: Shuiying Xiang, Xidian Univ., China

08:00–08:25 Shaofu Xu, Shanghai Jiao Tong Univ., China

Topic: Architecture design and chip fabrication of optical convolutional neural network

08:25-08:50 Ye Tian, Chongqing United Microelectronics Center (CUMEC), China

Topic: Artificial Intelligence empowered by Silicon photonic: engineering opportunities and challenges

08:50-09:15 Chaoran Huang, The Chinese Univ. of Hong Kong, China

Topic: Silicon photonic neural networks for high-speed signal processing

09:15-09:40 Zengguang Cheng, Fudan Univ., China Topic: Photonic memory and computing based on phase-change materials

09:40-10:05 Yahui Zhang, Xidian Univ., China

Topic: Photonic spiking neuron based on VCSELs: theory and experiment

10:05-10:20 Coffee Break

Presider: Jianji Dong, Huazhong Univ. of Science and Technology, China

10:20-10:45 Chao Qian, Zhejiang Univ., China

Topic: Deep learning for dynamic perception and self-adaptive invisibility cloak

10:45-11:10 Xingyuan Xu, Monash Univ., Australia

Topic: 11TOPS photonic convolution accelerator based on microcombs

11:10-11:35 Bing Bai, Photoncounts co.ltd/Beijing Jiaotong Univ., China

Topic: Photonic computing chip for nonlinear distortion compensation in optical communication system

11:35-12:00 Jiamin Wu, Tsinghua Univ., China

Topic: Opportunities and challenges for practical applications of optical neural network

Presider: Weiwu Zou, Shanghai Jiao Tong Univ., China &

Hongwei Chen, Tsinghua Univ., China

12:00-12:25 Plenary discussion

Workshop 5: Nonlinearity Compensation or Advanced Coded Modulation Schemes to Achieve Fibre's Ultimate Transmission Limit?

Workshop Time: 14:00-17:20, Sunday, 24 October Venue:

Shanghai Room, 2F

Organizers

Bin Chen, Hefei Univ. of Technology, China

Gabriele Liga, Eindhoven Univ. of Technology, Netherlands

Lin Sun, The Hong Kong Polytechnic Univ., China

Description: Optical fibre transmission capacity is still unknown. However, what we know for sure is that fibre capacity is theoretically achievable using forward error correction in combination with one of these two alternative approaches: i) nonlinearity compensation (NLC); ii) coded modulation.

Digital nonlinearity compensation schemes have proven to be extremely effective when it comes of suppressing nonlinear distortions on the received signal, but is limited by high computational complexity. On the other hand, nonlinearity-tailored coded modulation schemes can be in general implemented with a lower complexity than NLC but they have not so far yielded dramatic information rates improvements. The question is then which of these two approaches is more effective in terms of performance-complexity tradeoff?

In this workshop, speakers will share their views on the future of approaching capacity and the prospects of performance-complexity tradeoff for optical fibre communication system.

Speakers:

Presider: Bin Chen, Hefei Univ. of Technology, China

14:00-14:20 Christian Häger, Chalmers Univ. of Technology, Sweden

Topic: Reducing the complexity of digital backpropagation with machine learning

14:20-14:40 Stella Civelli, Scuola Superiore Sant'Anna, Italy

Topic: Tailored Shaping, Improved Detection, Simpler Backpropagation: the Road to Nonlinearity Mitigation

14:40-15:00 Yukui Yu, HiSilicon, China

Topic: Implementation aspects of nonlinear equalizer for IM/DD systems

15:00-15:20 Zhipei Li, Beijing Inst. of Technology, China Topic: Machine learning based DSP techniques for probabilistically shaped signals maximizing GMI

Presider: Lin Sun, The Hong Kong Polytechnic Univ., China

15:20-15:30 Plenary discussion

15:30-15:45 Coffee Break

Presider: Gabriele Liga, Eindhoven Univ. of Technology, Netherlands

15:45-16:05 Kaiquan Wu, Eindhoven Univ. of Technology, Netherlands

Topic: Temporal shaping and high-dimensional modulation for fiber nonlinear mitigation

16:05-16:25 Mengfan Fu, Shanghai Jiao Tong Univ., China

Topic: Nonlinearity-tolerant probabilistic shaping in optical coherent transmissions

16:25-16:45 Metodi Yankov, Technical Univ. of Denmark, Denmark

Topic: Block error detection driven nonlinearity compensation for optical fiber communications

16:45-17:05 Yi Lei, Hefei Univ. of Technology, China Topic: Hybrid hard/soft decision staircase decoding for low-cost high-speed optical transmission

Presider: Lin Sun, The Hong Kong Polytechnic Univ., China

17:05-17:20 Plenary discussion

Workshop 6-7: Biophotonic Imaging Roadmap 2021

Workshop Time: 9:00-16:45, Sunday, 24 October Venue:

Changchun Room, 2F

Organizers

Peng Xi, Peking Univ., China **Xunbin Wei**, Peking Univ., China

Junle Qu, Shenzhen Univ., China

Description: In the 21st century, biomedical imaging presents a series of new development trends: breaking the diffraction limit, high-speed, deep three-dimensional, label-free imaging. In association with other novel technologies such as multi-modality probes, new light sources, detectors, lightfield manipulation, computational imaging, and other

related technologies, biophotonic imaging provides new solutions and insights for many applications. Arising from asking questions to analyzing questions, this workshop will give examples of the cutting-edge biological imaging technologies and their applications, and discuss how we can expand the application of biological photonics imaging in interdisciplinary fields with these new tools. In the meantime, we will address how biophotonics field can better respond to our national calls, to solve the challenging international or regional life science and medicine problems.

Speakers:

President: Xunbin Wei, Peking Univ., China

09:00–09:30 Peng Xi, Peking Univ., China

Topic: Super-resolution: an adventure on a new dimension

09:30–10:00 Ming Lei, Xi'an Jiaotong Univ., China

Topic: Multi-color structured illumination microscopy for live cell imaging based on the enhanced image recombination transform algorithm

10:00–10:15 Coffee Break

10:15–10:45 Liwei Liu, Shenzhen Univ., China

Topic: Multimodal optical microscopic imaging technology and its biomedical applications

10:45–11:15 Guohua Shi, Suzhou Inst. of Biomedical Engineering and Technology Chinese Academy of Science, China

Topic: TBD

11:15–14:00 Lunch Break

President: Junle Qu, Shenzhen Univ., China

14:00–14:30 Xunbin Wei, Peking Univ., China Topic: TBD

14:30–15:00 Sihua Yang, South China Normal Univ., China

Topic: Photoacoustic imaging: medical transformation from small animals to humans

15:00–15:15 Coffee Break

15:15–15:45 Chao Tian, Univ. of Science and Technology of China, China

Topic: Biomedical photoacoustic computed tomography

15:45–16:15 Ke Si, Zhejiang Univ., China

Topic: Deep tissue optics imaging and its applications

President: Peng Xi, Peking Univ., China

16:15–16:45 Plenary discussion

Workshop 8-9: Heterogeneous Photonic Integration on Silicon

Workshop Time: 9:00–16:55, Sunday, 24 October Venue:

Beijing Room, 2F

Organizers

Liu Liu, Zhejiang Univ., China

Xinlun Cai, Sun Yat-sen Univ., China

Hon-Ki Tsang, The Chinese Univ. of Hong Kong, China

Description: Silicon has become the platform of choice for large-scale photonic integration. Its compatibility with the mature CMOS processing technology offers the well-known advantages of scalability, low-cost at high-volume, and high yield. Despite its success during the last 20 years in both academia and industry, further improvement on functionalities and performances of silicon photonic circuits beyond the limitations posed by the intrinsic material capabilities of silicon is needed for photonics. Improvements in silicon photonics for efficient light generation, optical amplification, high-speed and efficient optical modulation, low-noise high quantum-efficiency high-speed photodetectors, nonlinear photonic devices and integrated quantum photonic applications may be brought about with the use of different materials integrated on silicon. Heterogeneous integration technology can bring together silicon and other materials with better optical properties. Combining the best of different material systems, it holds the potential to realize full functioning photonic circuits. This workshop will focus on recent advances and future developments of heterogeneous photonic integration on silicon in all related aspects including fabrication processes, discrete devices, integration technologies, novel two-dimensional materials on silicon etc.

Speakers:

President: Xinlun Cai, Sun Yat-sen Univ., China

9:00–9:20 Bowen Song, UC Santa Barbara, USA

Topic: Heterogeneous Integration by Direct Epitaxy on Silicon: Lasers and Photodetectors

9:20–9:40 Yuan Yuan, Hewlett Packard Labs, USA

Topic: Energy-Efficient Silicon Photonics with Heterogeneous Integration

9:40–10:00 Siming Chen, University College London, UK Topic: Roadmap of Monolithic III-V Quantum Dot Laser in Silicon Photonics

10:00–10:15 Coffee Break

10:15–10:35 Kei-May Lau, Hong Kong Univ. of Science and Technology, China

Topic: Heterogeneous epitaxy on silicon for lasers and photodetectors

10:35–10:55 Weihua Guo, Huazhong Univ. of Science and Technology, China

Topic: A potential new way for the hybrid integration of the laser and silicon waveguide

10:55–11:15 Gunther Roelkens, Ghent Univ., Belgium Topic: micro-transfer printing for heterogeneous silicon photonic integrated circuits

11:15–11:45 Plenary discussion President: Liu Liu, Zhejiang Univ., China

13:50–14:10 Huan Li, Zhejiang Univ., China

Topic: Integrated Acousto-Optics on Thin-Film Lithium Niobate
14:10–14:30 Xinjun Wang, Peking Univ., China Topic: Si-III-V comb and system application

14:30–14:50 Xiaoxiao Xue, Tsinghua Univ., China

Topic: High-efficiency microcomb generation and applications
14:50–15:10 Linjie Zhou, Shanghai Jiao Tong Univ., China

Topic: Nonvolatile optical control using phase change materials on silicon

15:10–15:25 Coffee Break

15:25-15:45 Yi Wang, The Chinese Univ. of Hong Kong, China

Topic: Hybrid 2D materials for photonic integration

15:45–16:05 Zhichao Ye, Chalmers Univ. of Technology, Sweden

Topic: Ultralow-loss Si₃N₄ waveguides for nonlinear optics

16:05-16:25 Buwen Cheng, Institute of Semiconductor, CAS, China

Topic: Ge active photonic devices on Si substrate

16:25-16:55 Plenary discussion

Workshop 10: Co-integration of Photonics and Electronics

Workshop Time: 14:00–17:45, Sunday, 24 October Venue:

Dalian Room, 2F

Organizers

Yikai Su, Shanghai Jiao Tong Univ., China

Beiju Huang, Inst. of Semiconductors, CAS, China

Description: Co-integration of photonics and electronics has received considerable attention in recent years for the advantages of shrunk footprint, lower cost, and reduced power consumption. Silicon photonics is a platform on which photonics and electronics can be integrated, by leveraging standard fabrication processes in the microelectronics industry. This workshop will provide an open forum for speakers and audience to discuss the possible technologies to merge photonics and electronics on chip and forecast potential applications. We will first review the current status of co-integration with an emphasis on monolithic integration on silicon. Then we will talk about the desired performance metrics of building blocks, required fabrication processes, and mass production issues. Finally we will brain storm the possible roadmap for future technology development and the emerging applications.

Speakers:

President: Yikai Su, Shanghai Jiao Tong Univ., China

14:00–14:25 Xu Wang, Lumerical, Canada Topic: Co-design of photonics and electronics

14:25-14:50 Ke Li, Univ. of Southampton, UK

Topic: Electronic-photonic convergence for 100+Gb/s silicon photonics transmitters

14:50-15:15 Shuren Hu, Aurora Innovations Inc., Sweden

Topic: Integration choices in silicon photonics coherent LiDAR

15:15–15:30 Coffee Break

President: Beiju Huang, Inst. of Semiconductors, CAS, China

15:30–15:55 Xi Xiao, Wuhan research Inst. of post and telecommunications, China

Topic: What is the better choice for photonics-electronics integration? Chiplet or monolithic OEIC?

15:55–16:20 Min Tan, Huazhong Univ. of Science and Technology, China

Topic: Integration methods for scalable feedback control of multiple photonic parameters: key challenges and recent advances

16:20–16:45 Nan Qi, Inst. of Semiconductors, CAS, China

Topic: Monolithic integration – a bumpy way to make silicon photonics more electrical

16:45–17:15 Zan Zhang, Chang An Univ., China

Topic: 3D integration of photonics and electronics through CMOS backend process

President: Yikai Su, Shanghai Jiao Tong Univ., China & **Beiju Huang**, Inst. of Semiconductors, CAS, China

17:15–17:45 Plenary discussion

Workshop 11: Light: Science & Application workshop in Quantum Photonics

Workshop Time: 09:00–12:35, Sunday, 24 October Venue:

Shanghai Room, 2F

Organizers

Guilu Long, Tsinghua Univ., China

Lajos Hanzo, University of Southampton, UK

Yuhong Bai, Changchun Inst. of Optics, Fine Mechanics and Physics, CAS, China

Description: Photonics is vital in quantum information processing. While quantum key distribution (QKD), where secret

key is negotiated through quantum channel, continues its strong momentum and fast development, quantum secure direct communication (QSDC), where secret information is transmitted directly through quantum channel, is witnessing a transformation from a mere theoretical scheme to a fully developed practical protocol. Sponsored by the world-leading optical journal, Light, Science & Applications, the quantum photonics workshop features seven invited talks on the recent progress in QKD, QSDC and photonic chip for scalable quantum information processing. A 15-user quantum networks with QSDC, and the world first experimental endeavor to study the feasibility of QKD and QSDC from the 36000 km SJ-20 geosynchronous orbit satellite will be reported in the workshop. Important issues of quantum communication within the larger arena of the communication world will be touched in the workshop.

Speakers:

President: Guilu Long, Tsinghua Univ., China

09:00–09:25 Xianfeng Chen, Shanghai Jiao Tong Univ., China

Topic: A 15-user quantum secure direct communication network
09:25–09:50 Yuan-Xing Liu, Beijing Inst. of Aerospace Control Devices, China

Topic: Transmission of photonic polarization states from geosynchronous Earth orbit satellite to the ground

09:50–10:15 Hong-xin Li, Strategic Support Force Information Engineering Univ., China

Topic: A Scheme of Quantum Secure Direct Communication Based on 4-Dimension Hilbert Space by Mixing Bell State Particles and Single Photons

10:15–10:40 Gui-Lu Long, Tsinghua Univ./BAQIS, China

Topic: Long-distance high-throughput quantum secure direct communication

10:40-10:55 Coffee Break

President: Yuhong Bai, Changchun Inst. of Optics, Fine Mechanics and Physics, CAS, China

10:55–11:20 Xian-Min Jin, Shanghai Jiao Tong Univ., China

Topic: 3D photonic chip for scalable quantum information processing

11:20–11:45 Adrian Wonfor, Univ. of Cambridge, UK

Topic: Quantum networks in the UK

11:45–12:15 Lajos Hanzo, Univ. of Southampton, UK Topic:

TBA

Presider: Lajos Hanzo, University of Southampton, UK

12:15–12:35 Plenary discussion

Industry Fourms

Forum1: All optical service networks for F5G

Time: 8:30–12:35, Sunday, 24 October Venue: Nanjing Room,

3F

Organizers

Xiang Liu, Huawei Hong Kong Research Center, China

Yongli Zhao, Beijing Univ. of Posts and

Telecommunications, China

Yi Lin, Huawei, China

Description: F5G is the 5th generation fixed networks, which can support the 5th generation wireless networks. Low latency, massive connections, full fiber connection are the main features of F5G. There are mainly two parts in F5G, which are access networks and core networks. All optical service network is a new network prototype for F5G core networks. There are many challenges and opportunities for all optical service network in the near future. In this workshop, some famous experts from academic and industry will be invited to give some interesting topics, which includes the service requirement, network architecture, enabled protocols, routing algorithms, and so on.

Speakers:

Presider: Yongli Zhao, Beijing Univ. of Posts and Telecommunications, China

08:30–08:50 Haiyi Zhang, CAICT, China

Topic: TBD

08:50–09:10 Ming Jiang, ISG F5G & China Telecom, China

Topic: Introduction of ETSI ISG-F5G Standards

09:10–09:30 Han Li, China Mobile, China Topic: Fronthaul Technologies in 5G

09:30–09:50 Guangquan Wang (or others), China Unicom, China Topic: TBD

09:50–10:10 Ruiquan Jing, China Telecom, China Topic: Advances in OSU-OTN

10:10–10:25 Coffee Break

Presider: Yi Lin, Huawei, China

10:25–10:45 Raouf Boutaba, Univ. of Waterloo, Canada

Topic: Elastic Optical Network (EON) slicing technologies

10:45–11:05 Lei Wang, Alibaba, China

Topic: AONA: a data analytics platform for operation of datacenter optical networks

11:05–11:25 Nan Hua, Tsinghua Univ., China

Topic: Low-latency metro-access converged networks based on all-optical time slicing technology

11:25–11:45 Zuqing Zhu, China Univ. of Science and Technology, China

Topic: DRL-assisted Light-tree Reconfiguration for Dynamic Multicast in Elastic Optical Networks

11:45–12:05 Yongli Zhao, Beijing Univ. of Posts and Telecommunications, China

Topic: Framework and Key Technologies of Deterministic Full-Fibre Service Network (DFSN) for F5G

Presider: Xiang Liu, Huawei Hong Kong Research Center, China

12:05–12:35 Plenary discussion

Forum2: Next-generation optical switching and transmission technologies for F5G and beyond

Time: 14:00–18:30, Sunday, 24 October Venue: Nanjing

Room, 3F

Organizers

Gangxiang Shen, Soochow Univ., China

Ning Deng, Huawei, China

Vittorio Curri, Politecnico di Torino, Italy

Description: There are many issues and challenges in the F6G-oriented next-generation optical switching and transmission technology to be explored. This workshop attempts to provide an overview of the state of the art of current re-

search regarding OXC/ROADM, multiband optical transmission, 400G and beyond transmission, issues on ultra-low loss fibers, and so on. We will specifically pay attention to many important research topics, including C+L-band optical channel signal quality estimation, optical amplifier placement in multi-band transmission system, novel fiber and optical amplifier, large-scale OXC/ROADM, and low-cost ROADM. We aim to encourage an open discussion on the challenges and opportunities of next-generation optical switching and transmission technologies and help construct low-cost high-performance F6G.

Speakers

Presider: Ning Deng, Huawei, China

14:00–14:25 Tianhai Chang, Huawei Technologies, China Topic: New opportunities for PON technology evolution in the F5G era

14:25–14:50 Yi Cai, Soochow Univ., China

Topic: The key to unlock all information carriers for F5G and beyond: optical coherent DSP

14:50–15:15 Fan Zhang, Peking Univ., China

Topic: Fiber nonlinearity mitigation in high-speed coherent optical transmission systems

15:15–15:40 Haining Yang, Southeast Univ., China

Topic: Technology challenges and evolution of state-of-the-art LCoS and WSS

15:40–15:55 Coffee Break

Presider: Vittorio Curri, Politecnico di Torino, Italy

15:55–16:20 Yiran Ma, Finisar, Australia

Topic: Novel architecture and technologies for OXC/ROADM towards large-scale and low-cost optical networking

16:20–16:45 Maxim Kuschnerov, Huawei Technologies, Germany

Topic: Issues and opportunities for 800G and beyond optical transmission in F6G

15:45–17:10 Alex Donodin, Aston Univ., UK

Topic: Doped-fiber amplifiers beyond the C+L band

17:10–17:35 Nicola Calabretta, Eindhoven Univ. of Technology, Netherlands

Topic: Optical switching technologies in multi-band networking

17:35-18:00 Giacomo Borraccini, Politecnico di Torino, Italy
Topic: Autonomous optical line control in disaggregated networks

Presider: Gangxiang Shen, Soochow Univ., China

18:00-18:30 Plenary discussion

Forum3: Future artificial intelligence optical network toward 2030: technologies and applications

Time: 13:30-17:55, Sunday, 24 October Venue: Kaifeng Room, 3F

Organizers

Bin Zhang, Fiberhome Telecommunication Technologies Co., LTD, China

Jianxin Lv, Fiberhome Telecommunication Technologies Co., LTD, China

Liwei Kuang, FiberHome Telecommunication Technologies Co., LTD, China

Description: Optical network has been evolving into intelligent communication infrastructure with four distinguished characteristics, namely massive connection, broad band, on-demand service, as well as opening capability. Nowadays, advanced technologies such as optical cross connection (OXC), optical service unit (OSU), artificial intelligent (AI), digital twin (DT) are utilized in optical network, and hence efficiently enhance the functionalities and performances. This forum presents frontier studies, novel approaches, application scenarios, future prospect of intelligent optical network. Experts from telecommunication service providers, research Inst.s, manufactures, universities will provide excellent speeches. You are welcome to join us and discuss relevant research progress. In this forum, for each invited presentation, the time is 20 minutes including 5 minutes for questions and answers.

Speakers

Presider: Liwei Kuang, FiberHome Telecommunication Technologies Co., LTD, China

13:30-13:45 Welcome Speech (Zhiwen Fan, Vice Executive, Fiberhome Telecommunication Technologies Co.,LTD, China)

13:45-14:10 Yunbo Li, China Mobile, China

Topic: Building a Three-Dimensional Heterogeneous Optical Communication Network with the help of Artificial Intelligence

14:10-14:35 He Zhang, China Unicom, China

Topic: Application of Artificial Intelligence in Optical Network
14:35-15:00 Quan Cao, Wuhan Feisiling Microelectronics Technology Co., Ltd, China

Topic: Opportunities and Challenges of Optical Modules and Devices in Coherent Optical Transmission Systems"

15:00-15:25 Anran Xu, FiberHome Telecommunication Technologies Co., LTD, China

Topic: Recent Studies of Intelligent Optical Network: Theoretical Breakthrough, Technology Innovation, and Application Scenarios.

15:25-15:40 Coffee Break

Presider: Jianxin Lv, Fiberhome Telecommunication Technologies Co., LTD, China

15:40-16:05 Jian Wu, Beijing Univ. of Posts and Telecommunications, China

Topic: DSP Enhanced PAM Systems for Short-reach Optical Communications

16:05-16:30 Xiaoping Zheng, Tsinghua Univ., China
Topic: The Precise Perception for Future Intelligent Optical Network

16:30-16:55 Yajie Li, Beijing Univ. of Posts and Telecommunications, China

Topic: Resource Orchestration and Service Provisioning in Cloud-Network Integration

16:55-17:25 Hongtao Guan, Inst. of Computing Technology, Chinese Academy of Science, China

Topic: Challenges and Methods of Realizing Traditional Internet Middlebox by NFV

Presider: Bin Zhang, Fiberhome Telecommunication Technologies Co., LTD, China

17:25-17:55 Plenary discussion

Forum4: Silicon Photonics Integration for beyond 800G Pluggable and Co-Packaged Optics applications: Opportunities and Challenges

Organizers

Zhiping Zhou, Peking Univ., Shanghai Institute of Optics Fine Mechanics, China

Hua Zhang, LUSTER LightTech Co. Ltd., China

Description: This is the seventh time for Luster LightTech Co., Ltd. to organize the ACP Industry forum. This year's industry forum will focus on Silicon Photonics(SiP) Integration. Distinguished speakers from the industry will discuss the latest advances and marketing trends of the SiP integration. Some key aspects to be addressed in this forum will be included but not limited to the following:

What are the key challenges on 800G and beyond low power/cost solutions for intra-DC applications?

What will be optimal schemes for Silicon Photonics Integration? Hybrid Integration, Heterogeneous III-V-on-Silicon Photonic Integration, ...?

Will Co-Packaged Optics (CPO) be a nice-to-have or must-have solution within 3-5 years?

...

Speakers

Presider: Zhiping Zhou, Peking Univ., Shanghai Institute of Optics Fine Mechanics, China

09:00-09:10 Welcome Speech

09:10-09:30 Chongjin Xie, Alibaba, China

Topic: When Do We Need Co-Packaged Optics in Data Center Networks?

09:30-09:50 Yibo Liang, HiSilicon Optoelectronics Co., Ltd., China

Topic: on Next Generation Data Center Optical Modules & Optical Devices

09:50-10:10 Glenn Li, Skorpis Technologies, Inc., US

Topic: A Large-Scale Heterogeneous Photonics Integration Platform for Next-Generation

Communication Products

10:10-10:30 Siyang Liu, CUMEC, China

Topic: Challenges in CPO and Integrated Silicon Photonics Technology

10:30–10:40 Coffee Break

Presider: Hua Zhang, LUSTER LightTech Co. Ltd., China

10:40-11:00 Jiansheng Feng, Tencent, China

Topic: Optical Interconnection for the 5-th Paradigm

11:00–11:20 Hua Zhang, Hisense Broadband Multimedia Technologies Co., Ltd., China

Topic: Enabling technologies for 800G and beyond transceivers

11:20-11:40 Ben Chen, Hengtong Rockley Technology, China

Topic: The opportunities and Challenges of Silicon Photonics for Intra-DC application

11:40-12:00 Xuerui Sun, Great China Region and Korea, EXFO

Topic: The challenges of PIC component from R&D to mass production and cutting edge testing solution

Presider: Zhiping Zhou, Peking Univ., Shanghai Institute of Optics Fine Mechanics, China

12:00–12:30 Plenary discussion

Student Events

Organizer

Haoshuo Chen, Nokia Bell Labs, USA

Wechat Study Group

This event is designed to help students expand their professional networks while at the conference. Attendees are encouraged to join the study group by technical interests before the conference.

Research topics include :

- 1) Digital signal processing,
- 2) Software-defined network and network monitoring,
- 3) Space division multiplexing,
- 4) Microwave photonics,
- 5) Photonic integration.

2D barcodes for the wechat study groups can be found at ACP website .

(Link: <http://www.acpconf.com/art.html?id=34>)

During ACP2021, seminars will be arranged by each study group .

The study group will be maintained by the student volunteers after ACP2021 as a long-term study and information exchange platform .

Talking with industry leaders and distinguished researchers

Speakers

Student event 2: Talking with industry leaders and distinguished researchers

Session 1: Monday (Oct. 25), 10:00-11:30

Presider: Prof. Nan Ye, Shanghai University

Yunbo Li, Senior Engineer, Research Institution of China Mobile

Sai Chen, Senior Network Engineer, Alibaba Group

Jianqiang Li, Principal Network Engineer, Kuaishou Technology

Cang Jin, Development Engineer, OFS Laboratories

Binbin Guan, Senior Service Engineer, Microsoft

Changyu Lin, Senior software developer, Bytedance

Session 2: Monday (Oct. 25), 19:30-21:00

Presider: Prof. Bin Chen, Hefei University of Technology

Xiang Liu, Huawei Hong Kong Research Center,

Xi Chen, Senior Technical staff, Nokia Bell Labs

Shihuan Zou, Senior Global Business Development Manager, ADVA Optical Networking SE

Guangwei Cong, Senior Researcher, National Institute of

Advanced Industrial Science and Technology (AIST), Japan

Paikun Zhu, Researcher, National Institute of Information and

Communications Technology (NICT), Japan

Leimeng Zhuang, R&D Team Leader, IMEC USA

Qixiang Cheng, Assistant Professor, University of Cambridge