

Best Top-Score Paper Award Competition Session

D-Track

08:30–08:45 · ACP2026–0701–146

High-Fidelity Integer Factorization by QUBO Optimization on a Photonic Ising Chip

Kun Liu¹, Xin Ye¹, Luyu Si¹, Wenjia Zhang^{1*}, Zuyuan He¹

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

A 1.2 dB Insertion Loss on-Chip Mach-Zehnder Interferometer Type Optical Isolator Based on Stoichiometric Ce:YIG Magneto-Optical Thin Films

Di Wu¹, Zhenyuan Ren¹, Tianchi Zhang¹, Zixuan Wei¹, Jun Qin¹, 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

Inverse-designed Waveguides Enable Sub-picometer Resolution Spectrometer over 700nm Bandwidth

Hao He¹, Zengji Tu¹, 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

Slow-Light Modulator Based on Localized Mode-Recycling in Thin-Film Lithium Tantalate

Jiaxuan Gan¹, Weihang Wang¹, Zexu Wang¹, Mingyu Zhu¹, Aoyun Gao¹, Fei Huang¹, Zejie Yu¹, Weike Zhao^{1*}, Daoxin Dai^{1*}

1. College of Optical Science and Engineering, 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 $V_{\pi} \cdot L = 1.9 \text{ V} \cdot \text{cm}$, 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

Nonlinear dynamics in heterogeneously integrated III-V-on-Si microring lasers with on-chip delayed optical feedback

Yue Niu¹, 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 $1.3 \text{ kA} \cdot \text{cm}^{-2}$ 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

Impact of Wavelength Detuning on 100-Gb/s-PAM4 EML Performance and its Systematic Operating-Point Search

Koichi-H Huang^{1*}, Jian Fang¹, Ming Yu¹, Xiaoli Ge¹, Chen Gao¹, Zhongbao Wu¹, Jiaheng Jing¹, Cedric Gao¹, Kaifeng Yang¹

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

A 4×128 Gbps 7.8pJ/b Compact Integrated Transmitter with Silicon Slow-Light Modulator

Erse Jia¹, Weisheng Wang¹, Jun Li¹, Haiwen Cai¹, Nan Qi², 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 nm 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

Electrically Tuned High-Performance III-V/Lithium Tantalate External-Cavity Laser

Xiaoying Guo¹, Xiao Wu², Yuyao Guo^{1,3*}, Yu Li^{1,3}, Liangjun Lu^{1,3}, Yang He², Cheng Zeng², 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

An End-to-End 850-nm VCSEL-Based Optical Wireless Link Supporting 130-Gb/s NRZ and 180-Gb/s PAM-4 Transmission

Peng Yan¹, Shenghui Wu², Yunhao Zhang¹, Yu Sun³, Zhen Zhen², Qijie Xie², 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

Monolithic SiN Passive Front-End for Polarization-Insensitive CWDM Applications

Qingyang Du¹

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

High-Power-Tolerant and Low-Loss Si-SiN Interlayer Coupler Based on a Double-Tapered Adiabatic Structure

Tianqi Song¹, Ningyu Zhang¹, 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

A compact 32-channel reconfigurable spectral processor based on a Loopback Arrayed Waveguide Grating

Haoran Zhang¹, Xiaotian Zhu², Brent E. Little³, 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

13:30-13:45 · ACP2026-0701-127

First Real-time 128Tb/s and 256Tb/s Unrepeated Field Trial using 400Gbps and 800Gbps OTN transponders over Field-deployed 137.76-km Ultra-low-loss Multi-core Fiber Link

Zilin Fan¹, Chao Wu¹, Jian Cui^{1*}, Yu Deng¹, Zhuo Liu¹, Yuxiao Wang², Yufeng Han³, Nan Sun³, Yue Tian⁴, Bin Hao¹, Bin Wu², Jinggang Cao², Yong Chen², Shang Cao⁴, Zihui Dong³, Wei Sun³, Yanchun Zhang³, Cheng Chang¹, Yan Sun¹, Bing Yan², Ninglun Gu¹

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 unrepeated 137.76-km field trial over field-deployed ultra-low-loss large-effective-area 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

Photonic Integrated Complementary Carrier-Extracted Self-Coherent Receiver Enabled by Add-drop Resonators

Haojie Zhu¹, Zhengrong Zhao¹, Jinhong Xu², Boshu Sun¹, Yuhao Fang¹, Weiqi Lu¹, Dayu Shi¹, Jiwei Xie¹, Puzhen Yuan¹, Jingchi Li³, Lan Li^{1,2}, Yikai Su³, 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 integrated complementary 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

Real-time 48-Tb/s C+L Band Transmission over 412.36 km Hollow-core Fiber with 800 Gb/s/λ

Mi Shuchao¹, Zhang Xu^{1*}, Li Xingfeng¹, Ji Honglin¹, Wang Qibing¹, Lai Yeping¹, Jiang Ming¹, Feng Jingbin¹, Li Chao¹, Ding Wei², He Zhixue^{1*}, Yu Shaohua¹

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

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 Hu¹, Mingqing Zuo¹, Zihan Li², Shiyu Qin², Dawei Ge¹, Dong Wang¹, 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 ($\sigma=0.28$), marking the first demonstration to simultaneously achieve 1.6 Tb/s and 900 km.

14:30-14:45 · ACP2026-0701-125

Modeling and Performance Analysis of Distributed Time-Varying Optical Fiber Channels

William Shieh¹, 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

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 Deng¹, Zhuo Liu¹, Yuan Li¹, Yuxiao Wang², Yue Tian³, Yufeng Han⁴, Nan Sun⁴, Chao Wu¹, Zilin Fan¹, Bin Hao¹, Jinggang Cao², Yong Chen², Bin Wu², Shang Cao³, Zhihui Dong⁴, Wei Sun⁴, Yanchun Zhang⁴, Cheng Chang¹, Yan Sun¹, Bing Yan², Ninglun Gu¹

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-area 4-core fiber cable.

15:00-15:15 · ACP2026-0701-155

Low-Complexity Cascaded Error Feedback Noise Shaping with Residual In-Band Noise Suppression Achieving Over 10 dB SNR Gain for Fronthaul

Yicheng Xu¹, Yixiao Zhu¹, Yongxin Sun¹, Weisheng Hu¹, 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

Fast and Accurate Waveform-Level Channel Modeling Using Deep Learning for 300 GBaud S+C+L-band systems

Mingzhe Chen¹, Minghui Shi¹, Zekun Niu^{1*}, Kaiyan Jin¹, Junzhe Xiao¹, Weisheng Hu¹, 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 <0.2 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

Optical Frequency Comb-Assisted Multiband RF Signal Generation Using Actively Phase-Stabilized Spectral Stitching

Jincong Hu¹, Xihua Zou^{1*}, Ningyuan Zhong¹

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

Codeword-Error-Ratio-Based Transmitter Compliance Metric for High-Speed Optical Interconnects with DFE-Based Receivers

Leyan Fei¹, Yongxin Sun¹, Yicheng Xu¹, Haiyun Xin², Weisheng Hu¹, 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

1.08-Tb/s Visible-Light Optical Interconnect Using a 50-Channel PDM Transceiver

Xinyi Liu¹, Yunkai Wang¹, Zhuoran Hu¹, Zengyi Xu¹, Suning Guan¹, 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

Demonstration of 10 Mbps Deep-Space Optical Uplink Communication at 0.711 Signal Photocounts per Information Bit

Yu Miao^{1,2}, Yueying Zhan¹, Xiaowei Wu¹, 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 0.711 signal photocounts per information bit, delivering a 0.6 dB sensitivity gain versus the non-gated receiver.

17:00-17:15 · ACP2026-0629-25

A Simplified Optical Wireless Communication System with Integrated Alignment and Ranging Using Retroreflected Beams

Tianjin Mei¹, Wenjing Xuan¹, Yifei Zhu¹, Hanchang Xiao¹, Qirui Xu¹, 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

Highly Robust Time-Trajectory-Coded 4D-BPSK Format for Long-Range Coherent Optical Inter-Satellite Links

Fang Dong¹, Yi Wei^{2,3}, Haoyu Zhang¹, Zhe Feng¹, Haiwen Cai⁴, Jianfeng Sun⁵, Feng Bao¹, Junwen Zhang^{1,6}, Nan Chi^{1,6*}

1.Fudan University, China;2.Shanghai Key Laboratory of Collaborative Computing in Spatial 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

NP-Track

08:30-08:45 · ACP2026-0723-4

Bidirectional High-Capacity Integrated Sensing and Communication Emulation Using Interconnected Counter-Propagating Recirculating Loops

Junyu Wu¹, Zexu Liu¹, Lei Liu^{1,2}, Honglin Jin³, 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

SIRT-Based Tomographic Reconstruction of Refractive Index Profiles in Specialty Sensing Fibers with Non-Circular Claddings

Chao Wang¹, Li Pei^{1*}, Jianshuai Wang¹, Zhouyi Hu¹

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

Optomechanically enhanced ppb-level NH₃ sensing with a graphene-functionalized on-chip microcavity

Yanhong Guo¹, Yuchen Wang¹, Huize Yang¹, Guangming Zhao², Baicheng Yao¹, Teng Tan¹

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 NH₃ adsorption 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

High-Resolution Multi-Target Ranging via Coherent Chirped Pulse Interferometry

Yitian Gong¹, Yunjie Zeng¹, 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, however, 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. Digitaldechirping 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 $\tau = 1.26$ ms.

09:30-09:45 · ACP2026-0701-41

Programmable Photonic Processor for Ultra-Low-Error Multi-Frequency Microwave Photonic Measurement

Ziyao Zhang¹, Yuxin Liang², Shijia Fan², Hanmeng Li², 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

Ultra-Low-Loss Silicon Nitride Tunable Photonic Delay Line with Nanosecond-Scale Delay

Yuyan Yao¹, Zexu Wang¹, Ruitao Ma¹, Zejie Yu¹, Yiwei Xie^{1*}, Daoxin Dai¹

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

Fully On-Chip Ultra-Wideband Simultaneous Measurement of Doppler-Frequency-Shift and Angle-of-Arrival System

Xinyu Wang¹, Yuchen Shi¹, Zichen Guo¹, Shilan Zhou¹, Shuyue Zhang¹, Jianyi Yang¹, Qikai Huang², 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 $\pm 2^\circ$ for a range of $-90^\circ - 90^\circ$ in 2–40 GHz frequency band.

10:45-11:00 · ACP2026-0721-3

Entanglement between Integrated Quantum Memories in the Telecom Band

Yaoqing Zhang¹, Haoze Zhang¹, Yunru Fan¹, Liang Zhai¹, Hao Li², Lixing You², Guangcan Guo¹, 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

Coherent spin-photon interface of single PL6 color center in silicon carbide

Zhenxuan He¹

1. University of Science and Technology of China, China

In this talk, I will present our 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 $99.69 \pm 0.03\%$ and a readout contrast of $98.31 \pm 1.03\%$. The spin-photon entangled A2 transition exhibits narrow optical linewidths of about 180 MHz and a polarization visibility of $\sim 82\%$. 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

LED-Pumped Silicon-Based Nanocavity Light Source with Enhanced Spectral Purity

Jingyu Chang¹, Renjie Tang², Zezhao Ju³, Yalan Si³, Jinghan Yang⁴, Yingchun Wu¹, Yuting Ye², Zequn Chen², Hongtao Lin³, 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](#)

13:30-13:45 · ACP2026-0626-10

Inverse-Designed Meta Processing Units for Task-aware Photonic Computing Systems

Chu Wu¹, Zeyu Cai¹, Songtao Yang¹, Ruoyu Shen¹, Yinan Zhao¹, Haiou Zhang¹, Wei Chu¹, 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

A Vision-Language Model for Optical Equipment Understanding and Fiber Connection Generation

Rui Zhao¹, Shengnan Li¹, Fubin Wang¹, Xiaotian Jiang², Ydi Wang¹, Min Zhang¹, 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 with LoRA 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

Storage-aided Hierarchical Aggregation and Orchestration for the Optical Internet of Agents

Xiao Lin^{*}, Wang Li¹, Ziang Feng¹, Zuqi Teng¹, Haoyuan Zheng¹, 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

14.6-Tb/s GMI with 400G-per-channel Direct-Detection Optical Interconnects over 25-km AR-HCF

Yixiao Zhu^{*}, Yutong Pan², Xiang Cai², Tianhong Zhang², Tianchi Zhong², Shikui Shen^{3*}, Yu Qin^{4,5}, Yichun Shen⁵, Limin Xiao⁴, Shuailuo Huang³, Zelin Wang³, Weisheng Hu¹, 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

RingStitch: Demand-Aware Optical Stitching for Fragmented TPU Clusters

Huiru Ao¹, Fan Yang¹, Binglei Wang¹, Bo Liu¹, Jialong Li^{1*}

1.Shenzhen University of Advanced Technology, 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

Hybrid ML-based Rapid Calibration Method for Wavelength Selective Switches

Zihe Zhang¹, Yuzhe Li¹, Xiao Zhang¹, Chen Liu¹, 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

MoSE: Mode-Switching Expander for Mixed LLM Training and Inference

Fan Yang¹, Ying Zhou², Binglei Wang¹, Zhenjie Zhou¹, Jialong Li^{1*}

1.Shenzhen University of Advanced Technology, 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

A 35-dB-Power-Budget 228-Gb/s EDFA-Free Self-Coherent PON Enabled by Coordinated Two-Stage SOA Control

Yuhao Fang¹, Weiqi Lu¹, Haojie Zhu¹, Yuan Puzhen¹, Dayu Shi¹, 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.