Postdeadline Paper Session I

16:00-17:45 • November 06, 2023 • Monday Presider: William Shieh, Westlake University, China

16:00-16:15 • ACPPOEM-1007-3

High-precision static strain field measurement based on Dense Fiber Bragg Grating Array

Zhijun Yan^{1,2}, Weiliang Zhao¹, Xiangpeng Xiao¹, Yibo Liu¹, Peng Wang², Qizhen Sun^{1,2}

1. Huazhong University of Science and Technology, China; 2. Wuxi Research Institute, Huazhong University of Science and Technology, China

We have achieved precise static strain field measurement and applied for 2D shape sensing by using DFBG array with 20 different wavelengths. The accuracy was high with 0.83 µs strain sensing and 0.2% reconstruction error.

16:15-16:30 • ACPPOEM-1005-2

Record Experimental Demonstration of 800G/lane based 36-Tb/s 3150-km Transmission enabled by Silicon-based **IC-TROSA**

Xiaoshuo Jia¹, Yan Li¹, Jingwei Song¹, Ming Luo², Chao Yang², Xu Zhang², Qingyu He², Xi Xiao^{2,3}, Daigao Chen³, Hongguang Zhang³, Jifang Qiu¹, Xiaobin Hong¹, Hongxiang Guo¹, Zhisheng Yang¹, Jian Wu¹

1.State Key Laboratory of Information Photonics and Optical Communications, Beijing University of Posts and Telecommunications, China; 2. State Key Laboratory of Optical Communication Technologies and Network, China Information and Communication Technologies Group Corporation, China; 3.National Information Optoelectronics Innovation Centre, China Information and Communication Technologies Group Corporation, China

800-Gb/s/lane based 36-Tb/s 3150-km transmission in a 100-GHz spaced WDM configuration employing silicon-based IC-TROSA in C-Band at the spectral of 8-bit/s/Hz is successfully demonstrated by utilizing 90-GBaud PS-64QAM signal, contributing to a capacity-distance product of 113.4-Pb/s×km, which is a new record for the 800-Gb/s/lane based transmissions employing single core fibers.

16:30-16:45 • ACPPOEM-1008-10

Record Long-haul Transmission with FIFO-less Multicore EDFA over 125- μ m Cladding MCF

Hui Yan¹, Hao Liu¹, Wenxiong Du¹, Yizhou Wang¹, Shuai Yuan¹, Yongfu Wang¹, Ming Chen¹, Wei Sun², Xuegang Lao², Gonghui Zhang², Lin Wang², Wendou Zhang^{1,3}, Wenwei Xu¹

1.Huawei Technology Co., Ltd., China; 2.Jiangsu Alpha Optic-electric Technology Co., Ltd., China; 3.Peng Cheng Laboratory, China

The record 203 Tb/s and 102 Tb/s SDM transmission enabled by C+L band FIFO-less MC-EDFA over 3105 km and 7245 km weakly-coupled 4-core MCF with 125-µm cladding diameter was first experimentally demonstrated using PCS-16QAM and PDM-QPSK, respectively. Effective cost was achieved by G.652-compatible MCF and fully-integrated-components multicore EDFA.

16:45-17:00 • ACPPOEM-1008-14

0.9-dB/m Single-mode Silicon Nitride Nonlinear Integrated Waveguides for Continuous-wave Wavelength Conversion Ping Zhao, Marcello Girardi, Vijay Shekhawat, Zonglong He, Magnus Karlsson, Victor Torres-Company, Peter Andrekson Chalmers University of Technology, Sweden

We present efficient wavelength conversion with an over-180-nm bandwidth, using single-mode Si₃N₄ Kerr integrated waveguides with record-low losses of 0.9±0.2 dB/m. This enables a first-time 100-Gbps-single-channel all-optical L-to-Sband translation without amplifying signal/idler-waves for $\chi^{(3)}$ waveguides.

17:00-17:15 • ACPPOEM-1008-20

100 Gb/s All-Optical Programmable Logic Array Chip Based on Full Set of Canonical Logic Units

Xiaoyan Gao¹, Wentao Gu¹, Wenchan Dong², Jing Xu², Jianji Dong¹, Xinliang Zhang¹

1. Wuhan National Laboratory for Optoelectronics, Huazhong University of Science and Technology, China; 2. School of Optical and Electronic Information, Huazhong University of Science and Technology, China

We experimentally demonstrate an all-optical programmable logic array scheme through linear pre-coding and nonlinear four-wave mixing in silicon-based integrated chip. The full set of canonical logic units are generated simultaneously at 100Gb/s.



17:15-17:30 • ACPPOEM-1006-1

Wideband Tuning Range Microwave Photonic Filter on ThinFilm Lithium-Niobate-on-Insulator for Next-Generation Wireless Communication

Hao Yan¹, Yiwei Xie¹, Shihan Hong¹, Lu Zhang², honggi zhang³, Qianyu He², Hang Yang², zhidong Lv², ke Wang⁴, Mingming Tan⁵, Andrew Ellis⁵, Daoxin Dai¹

1. Centre for Optical and Electromagnetic Research State Key Laboratory for Modern Optical Instrumentation, Zhejiang University, China; 2. College of Information Science and Electronic Engineering, Zhejiang University, China; 3. College of Information and Electronic Engineering, Zhejiang university, China; 4. School of Engineering RMIT University, Australia; 5. Aston Institute of Photonic Technologies, Aston University, United Kingdom

We propose the first reconfigurable integrated MPF on TFLN platform. The MPF exhibits an operation band extending to millimeter-wave (40 GHz), and tunable spectral resolution of 0.5-3 GHz. Gb/s-level RF wireless communications are demonstrated towards real-world scenarios.

17:30-17:45 • ACPPOEM-1008-5

1 Milliwatt Pumped Error-free 38 Gbaud Wavelength Conversion with AlGaAs Microresonators of 1 GHz Intrinsic Linewidth

Xinda Lu¹, Chanju Kim², Deming Kong², Nuo Chen¹, Yuntian Chen¹, Leif Katsuo Oxenløwe², Kresten Yvind², Xinliang Zhang¹, Lan Yang³, Minhao Pu², Jing Xu¹

1.Huazhong University of Science and Technology, China; 2.Technical University of Denmark, Denmark; 3.Washington University, St. Louis, United States

We demonstrate error-free 38 Gbaud wavelength conversion with only 1 mW pump power by taking the advantage of Al-GaAs-on-Insulator microresonators with high-quality factors, breaking the bandwidth-efficiency limit imposed on single resonator systems by two orders of magnitude.

Postdeadline Paper Session II

16:00-18:00 • November 06, 2023 • Monday

Presider: Chao Lu, The Hong Kong Polytechnic University, Hong Kong, China

16:00-16:15 • ACPPOEM-1007-5

405-GBd OOK and 201-GBd PAM-4 IM/DD Optics at Record Faster-Than-Nyquist Ratios of 226.6% and 62.1% Enabled by Advanced Noise Whitening

Qi Wu^{1,2}, Zhaopeng Xu¹, Yixiao Zhu², Honglin Ji¹, Yu Yang¹, Junpeng Liang¹, Gang Qiao¹, Shangcheng Wang¹, Lulu Liu¹, Jinlong Wei¹, Qunbi Zhuge², Weisheng Hu^{1, 2}

1.Peng Cheng Laboratory, China; 2.Shanghai Jiao Tong University, China

We demonstrate 405-GBd OOK and 201-GBd PAM-4 signaling in an intensity modulation and direct detection system with a 62-GHz brick-wall bandwidth. Record faster-than-Nyquist ratios of 226.6% and 62.1% are achieved for OOK and PAM-4 modulations.

16:15-16:30 • ACPPOEM-0930-2

Fully-loaded 80×400Gb/s DP-QPSK Transmission with Commercial 12-THz C6T+L6T EDFAs over Record Distance of 7000km

Dawei Ge¹, Mingging Zuo¹, Haibin Liu², Lin Gan², Dong Wang¹, Yongchao Chen², Dechao Zhang¹, Qiang Guo², Han Li¹ 1. China Mobile Research Institute, China; 2. Huawei Technologies Co., Ltd., China

By using commercial C6T+ L6T EDFAs with 12-THz spectrum, a record 7000 km of 80×400Gb/s QPSK over G.654.E is demonstrated for the first time. Performance comparison is also carried out for both G.652.D and G.654.E.

16:30-16:45 • ACPPOEM-1007-7

Field Trial of 7 × 89\lambda × 256 Gb/s C-Band Classical / CVQKD Co-Existence Transmission over 7-Core Fiber

Xin Wang, Jintao Wang, Yingyu Chen, Yongguang Xiao, Zongkai Li, Zhirong Chen, Zhaohui Li, Dawei Wang School of Electronics and Information Technology, Sun Yat-sen University, China

We successfully demonstrated the coexistence of CV-QKD and 89 classical channels in C-band transmitted over a 16.7 km field deployed 7-core fiber, achieving 35 Mb/s secure key rate with 22.8 Tb/s classical data per core.

16:45-17:00 · ACPPOEM-1008-18

First Demonstration of Quasi-Continuous S+C+L 154.5 Tbit/s Coherent Transmission in Hollow-Core Anti-resonant Fiber **Chen Hui**¹, Zhang Xu^{1,2}, Liu Zichen¹, Li Chao¹, Ji Honglin¹, Jin Siyue¹, Wang Qibing¹, Gao Shoufei³, Wang Yingying³, Ding Wei³, Wang Lei¹, Luo Ming⁴, Xiao Xi⁵, He Zhixue¹, Yu Shaohua¹

1.Peng Cheng Laboratory, China; 2.China Information and Communication Technologies Group Corporation, China; 3.Jinan University, China; 4. China Information and Communication Technologies Group Corporation, China; 5. National Information Optoelectronics Innovation Centre, China

We experimentally demonstrated a record-breaking high-capacity wavelength division multiplexing coherent transmission through a 1.4km hollow-corefiber, covering the guasi-continuous(14.8THz bandwidth) of S, C and L-band, and achieving 154.5 Tbit/s capacity for the first time.



17:00-17:15 • ACPPOEM-1005-1

Cost-Effective and High Capacity-Distance Product (~800Pbit/s×km) Single Mode Transoceanic Transmission Assisted by Silicon-Based Integrated Transponder and Long Span Length

Lin Jiang^{1,3}, Xi Xiao^{2,3}, Xingchen He¹, Youren Yu¹, Anlin Yi¹, Hong Li², Ming Luo^{2,3}, Jie Luo⁴, Liangming Xiong⁴, Chengpeng Fu⁵, Qianggao Hu⁵, Wei Pan¹, Lianshan Yan^{1,3}

1. Center for Information Photonics and Communications, Southwest Jiaotong University, China;2. The State Key Laboratory of Optical Communication Technologies and Networks, China Information and Communication Technologies Group Corporation, China;3. The Peng Cheng Laboratory, China;4. State Key Lab. of Opt. Fiber & Cable Manuf. Tech., Yangtze Optical Fiber & Cable Company Ltd., China;5. Accelink Technologies Co., Ltd.,, China

We report a cost-effective and high-capacity single mode transoceanic transmission system. It is the first time that the silicon-based integrated transponder and the long span length (~75km) are experimentally verified in such capacity-distance product (~800Pbit/s×km) system.

17:15-17:30 • ACPPOEM-1003-1

First Baud-Rate Sampled DSP-Free Self-Homodyne Coherent Receiver

Mingming Zhang¹, Xuefeng Wang¹, Can Zhao¹, Chengbo Li¹, Zihe Hu¹, Weihao Li¹, Haoze Du¹, Junda Chen¹, Jiajun Zhou², Shuai Zhang², Siyang Liu², Sheng Cui¹, Ming Tang^{1,3,4}

1.Huazhong University of Science and Technology, China; 2.Hubei Jiufengshan Laboratory, China; 3.Wuhan National Laboratory of Optoelectronics, China; 4.Optics Valley Laboratory, China

A DSP-free baud-rate sampled self-homodyne coherent receiver is achieved by utilizing all-optical signal processing. The error-free dual-polarization 64-GBaud QPSK signal reception has been verified in back-to-back (BER1e-6) and 1 km (BER5e-6) scenarios.

17:30-17:45 • ACPPOEM-1008-22

1-Pb/s CPRI-equivalent Rate Coherent DA-RoF Fronthaul with 1024-QAM Scalable in Capacity, Reach, and Linewidth Using Residual Carrier-based Phase Tracking

Yixiao Zhu¹, Xiansong Fang², Chenbo Zhang², Jingjing Lin², Yicheng Xu¹, Weiwei Hu², Zhangyuan Chen², Qunbi Zhuge¹, Fan Zhang², Xiaopeng Xie², Weisheng Hu¹

1. Shanghai Jiao Tong University, China; 2. Peking University, China

We demonstrate 1.0-Pb/s CPRI-equivalent rate fronthaul with 1024-QAM using modulator bias-induced residual carrier-based phase tracking. The reach is extended to 20-km SSMF with 4096-QAM and 80-km with 256-QAM, and laser linewidth is relaxed to 3MHz.

17:45-18:00 • ACPPOEM-1007-8

Real-Time 1.6T (2×800G) Optical Interconnection with Coherent BiDi and SiP-based Polarization Tracker for Dual LOs with 1THz Spacing

Juntao Cao¹, Tao Gui², Keshuang Zheng², Shuai Yuan², Chen Liu², Xuefeng Wang², Liangchuan Li²

1. The Hong Kong Polytechnic University, Hong Kong, China; 2. Huawei Technologies, China

For the first time, we demonstrate a real-time 1.6T (2×800G) optical interconnection for 10 km data center application with coherent bi-directional (BiDi) systems. In the systems, coherent BiDi uses single silicon photonics (SiP) based polarization tracker for remote homodyne coherent and achieved a record of 8 krad/s endless SOP tracking speed and wavelength demultiplexing for dual local oscillators (LOs) with 1THz spacing simultaneously. The proposed solution proves that it is promised for low cost and low power consumption 1.6T LR optical interconnection in data center networks.