Program Update Sheet

Invited and Tutorial Abstracts

T2E.1 • 10:30
Integrated Lithium Niobate Photonics and Applications, Marko Loncar[1]; [1]*Harvard University, USA.* Low loss integrated LiNbO3 photonic platform will be presented, along with its applications in optical communications, quantum technology, and spectroscopy. Specifically, electro-optic modulators, frequency combs, frequency converters/ shifters, and quantum transducers will be discussed.

T4A.1 • 16:00 Invited
Early Detection of Blood Clots in COVID-19 by High-throughput Imaging and Artificial Intelligence, Keisuke Goda[1]; [1]*University of Tokyo, Japan.* I present my group's recent development of a method for detecting precursors to microvascular thrombosis, a major complication of COVID-19, via high-throughput imaging and artificial intelligence.

T5A • Postdeadline Paper Presentations

19:30 -- 22:00
Virtual Room 7

T5A.1 • 19:30
Demonstration of 352-Gbit/s Single Line Rate PS-4096QAM THz Wired Transmission over Hollow-Core Fiber, Junjie Ding[1], Yanyi Wang[1], Jiao Zhang[2], Menghui He[1], Feng Zhao[3], Li Zhao[1], Wen Zhou[1], Yiwei Shi[1], Min Zhu[2], Jianjun Yu[1]; [1]*Fudan University, China;* [2]*Purple Mountain Laboratories, China;* [3]*Xian University of Posts and Telecommunications, China.* We experimentally demonstrated THz wired transmission over 1-m hollow-core fiber employing 32-Gbaud PS-4096QAM signal at 325 GHz and successfully achieved the single line rate of 352 Gbit/s and the net spectrum efficiency of 8.6 bit/s/Hz.

T5A.2 • 19:45
Ultra-compact Single-shot Spectrometer Enabled by Stratified Waveguide Filters, Ang Li[1], Yeshaiahu Fainman[3], Qixiang Cheng[2], Shilong Pan[1]; [1]*NUAA, China;* [2]*Cambridge University, United Kingdom;* [3]*UCSD, USA.* We demonstrate a silicon single-shot spectrometer with 0.008mm^2 footprint, the smallest on CMOS compatible platforms. Experimental results confirm a bandwidth of 180nm with a resolution of 0.45nm. It opens new pathway towards commercial integrated spectrometers.

T5A.3 • 20:00
Aggregated 1.059 Tbit/s photonic-wireless transmission at 350 GHz over 10 meters, Hongqi Zhang[1], Lu Zhang[1], Shiwei Wang[1], Zijie Lu[1], zuomin Yang[1], Siqi Liu[1], Xiaodan Pang[2], Xianmin Zhang[1], Xianbin Yu[1]; [1]*Zhejiang University, China;* [2]*KTH, Sweden.* We report on a multi-dimensional multiplexed THz photonic wireless communication system. A record aggregated net rate of 1.059 Tbit/s over a wireless distance of 10 m in the 350 GHz band is experimentally demonstrated.

T5A.4 • 20:15 6.
4Tb/s (16×400Gb/s) Nonlinear Frequency Division Multiplexing WDM Transmission over 640km SSMF, Xinyu Chen[1], Xiansong Fang[1], Fan Yang[1], Hao Ming[1], Chenjia Li[1], Lei Zhang[1], Fan Zhang[1]; [1]*Peking University, China.* We experimentally demonstrate nonlinear frequency division multiplexing WDM transmission over 640km SSMF with a record data capacity of 6.4Tb/s by employing the continuous nonlinear spectrum and neural network-based equalization in nonlinear frequency domain.

T5A.5 • 20:30
Real-time Single-Carrier 800Gb/s DP-64QAM Demonstration using Bi-Directional Self-homodyne Coherent Transceivers with

200krad/s Endless Active Polarization Controller, TAO GUI[1], Juntao Cao[1], Xi Chen[1], Keshuang Zheng[1], Shuai Yuan[1], Xiaotian Fang[1], Yu Lei[2], Qianxin Zhan[2], Dawei Wang[2], Qi Sui[2], Zhaohui Li[2], Liangchuan Li[1]; *[1]Huawei Technologies, China; [2]School of Electronics and Information Technology, Sun Yat-Sen University, China.* We successfully demonstrated a real-time 800Gb/s single-carrier SHC-BiDi transmission with the proposed APC solution tracking up to a record 200 krad/s SOP rotation speed without performance penalty. A ~10km transmission without EDFA is achieved via a low cost DFB laser.

T5A.6 • 20:45
Single-Lane 402 Gb/s PAM-8 IM/DD Transmission Based on a Single DAC and an O-Band Commercial EML, Md Sabbir-Bin Hossain[1,2], Jinlong Wei[1], Fabio Pittalà[1], Nebojša Stojanović[1], Stefano Calabrò[1], Talha Rahman[1], Tom Wettlin[2], Changsong Xie[1], Maxim Kuschnerov[1], Stephan Pachnicke[2]; *[1]Huawei Technologies Duesseldorf GmbH, Germany; [2]Chair of Communications, Kiel University, Christian-Albrechts-Universitat zu Kiel, Kiel, Schleswig-Holstein, DE, academic, Germany.* We demonstrate 402 Gb/s IM/DD transmission using a single DAC directly driving an O-band EML with PAM-8. Considering 15.31%-overhead SD-FEC, this yields to a record net bit rate of 348.62 Gbit/s over 2 km SSMF.

T5A.7 • 21:00
High-speed silicon micro-ring modulator at 2-μm waveband, Weihong Shen[1], Gangqiang Zhou[1], Jiangbing Du[1], Linjie Zhou[1], Ke Xu[2], Zuyuan He[1]; *[1]Shanghai Jiao Tong University, China; [2]Harbin Institute of Technology (Shenzhen), China.* Silicon micro-ring modulator with 18-GHz electro-optic bandwidth and <1-Vcm modulation efficiency was reported, achieving 50-Gbps highest-speed signaling at 1960 nm. Better endurance of two-photon absorption at 2 μm leads to significantly improved high-speed performances.

T5A.8 • 21:15
Field Trial of Cable Safety Protection and Road Traffic Monitoring over Operational 5G Transport Network with Fiber Sensing and On-Premise AI Technologies, Ming-Fang Huang[1], Shaobo Han[1], Glenn Wellbrock[2], Tiejun Xia[2], Chaitanya Narisetty[1], Milad Salemi[1], Yuheng Chen[1], James M. Moore[3], Philip Ji[1], Giovanni Milione[1], Ting Wang[1], Yukihide Yoda[4], Yoshinori Kitahara[4], Morio Ito[4], Yoshiaki Aono[4], Atsuo Itoh[4]; *[1]NEC Laboratories America Inc, USA; [2]Verizon, USA; [3]Verizon, USA; [4]NEC Corporation, Japan.* We report the distributed-fiber-sensing field trial results over a 5G-transport-network. A standard communication fiber is used with real-time AI processing for cable self-protection, cable-cut threat assessment and road traffic monitoring in a long-term continuous test.

T5A.9 • 21:30
Over 60GHz InP CDM and ICR Enabling 800Gbps LR/ER/ZR/ZR$^+$ Transmission Links With 120Gbaud/DP-16QAM Modulation, You-Wei Chen[1], Konstantin Kuzmin[1], Maxime Poirier[1], Tadatoshi Tomimoto[1], George Zarris[1], Ron Moore[1], Chengkun Chen[1], Wuchun Wu[1], Jun Huang[1], Marcel Boudreau[1], Hui Xu[1], Winston I. Way[1]; *[1]NeoPhotonics, USA.* By using >60GHz 3dB bandwidth InP coherent driver modulator (CDM) and intradyne coherent receiver (ICR), we have demonstrated a record ≦13.6dB link budget for 800LR/ER, an rOSNR of 27dB for 600-km 800ZR$^+$, and an 800ZR link accommodating optical line protection with a >20dB fiber loss budget.

T5A.10 • 21:45
Erbium-doped waveguide amplifier on lithium niobate on insulator with 27.94 dB total gain and 6.20 dB/cm net gain, minglu cai[1], kan Wu[1], junmin Xiang[1], Jianping Chen[1]; *[1]Shanghai Jiao Tong University, China.* We demonstrate an erbium-doped waveguide amplifier on lithium niobate on insulator. The 2.58-cm long amplifier has 27.94 dB total gain (signal enhancement), 6.20 dB/cm net gain, and 3.48 dB noise figure at 1531.6 nm.