

ACP 2017 Postdeadline Sessions Abstracts

Su2B • Postdeadline Session I

Bauhinia Room

10:30 -- 11:45

Presider: Chao Lu; *The China Polytechnic Univ., China*

Su2B.1 • 10:30

Fiber Optic Ocean Bottom Magnetometer, Wentao Zhang¹, Fang Li¹, Zhaogang Wang¹, Rui Ma¹, Wenzhu Huang¹; ¹*Chinese Academy of Sciences, China*. A 3-component fiber optic ocean bottom magnetometer (FOOBM) based on fiber laser sensing is proposed. The principles of the fiber laser magnetometer (FLM), the FOOBM and the interrogation system are presented. A field test is carried out and the results show that the FOOBM is available to work in the ocean.

Su2B.2 • 10:40

376 Pb/sxkm Transmission Record over 13,419km Using TPCS-64QAM and C-Band EDFA-Only, Omar AIT SAB¹, Amirhossein Ghazisaeidi², Philippe Plantady¹, Alain Calsat¹, Ivan Fernandez de Jauregui Ruiz², Suwimol Dubost¹, Pascal Pecci¹, Jeremie Renaudier², Vincent Letellier¹; ¹*Alcatel Submarine Networks, France*; ²*Nokia Bell Labs, France*. We report on a C-band transpacific transmission using capacity-approaching truncated probabilistic constellation shaping 64QAM (TPCS-64QAM), adaptive-rate FEC decoding and digital nonlinear compensation achieving 28 Tb/s over 13,419 km transmission at 5.6 b/s/Hz spectral efficiency demonstrating a record 376 Pb/skm capacity-distance product.

Su2B.3 • 10:50

102.4-Gb/s Optical SSB Nyquist-PAM-4 Transmission over 800-km SSMF at C-band Using Direct-Detection Kramers-Kronig Receiver, Mingyue Zhu¹, Xingwen Yi¹, Jing Zhang¹, Xiang Li³, Ming Luo³, Fan Li², Zhaohui Li², Xiatao Huang¹, Kun Qiu¹; ¹*Univ. of Electronics Science & Tech, China*; ²*School of Electronics and Information Technology, Sun Yat-Sen Univ., China*; ³*State Key Laboratory of Optical Communication Technologies and Networks, Wuhan Research Inst. of Posts and Telecommunications, China*. By overcoming various detrimental effects in a nonlinear fiber transmission using DDMZM-based optical SSB transmitter and direct-detection Kramers-Kronig receiver, we successfully demonstrate a record transmission of 102.4-Gb/s Nyquist-PAM-4 over 800-km SSMF at C-band.

Su2B.4 • 11:00

First demonstration of second-order few-mode Raman amplified ultra-low-noise transmission of WDM/MDM QPSK signals over 100-km FMF, Jiexiong Li¹, Chengkun Cai², Jiangbing Du¹, Lulu Wang², Long Zhu², Andong Wang², Ming-Jun Li³, Hao Chen³, Jian Wang², Zuyuan He¹; ¹*Shanghai Jiao Tong Univ., China*; ²*Huazhong Univ. of Science and Technology, China*; ³*Corning Incorporated, USA*. We experimentally demonstrate, for the first time to our best knowledge, an ultra-low-noise second-order few-mode Raman amplified 8-wavelengths WDM/MDM QPSK transmission over 100-km FMF with ~8-dB on-off gain and < 0.4 dB mode-dependent gain for LP01 and LP11 modes.

Su2B.5 • 11:10

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First Demonstration of Bandwidth-on-Demand All-Optical Intra-Data Center Network Supporting Joint Waveband and Sub-Waveband Switching, Gangxiang Shen¹, Mingyi Gao¹, Ning Wang¹, Wei Chen¹, Bingli Guo², Shanguo Huang², Weidong Shao¹, Bowen Chen¹, Yongcheng Li¹, Longfei Li¹, Wei Chen³, Qi Yang⁴; ¹*Soochow Univ., China*; ²*BUPT, China*; ³*Jiangsu Hengtong Fiber Science and Technology Corporation, China*; ⁴*State Key Lab. of Optical Comm. Tech. and Networks, Wuhan Research Inst., China*. We design a bandwidth-on-demand all-optical intra-data center switching architecture. It is flexible to realize different switching capacity combinations between input-output ports. The system is experimentally demonstrated with the support SDON control capability and on-demand port-to-port switching capacity ranging from 100 Gb/s to 400 Gb/s.

Su2B.6 • 11:20

1.8- μm DBR Lasers With Over 11-nm Continuous Wavelength Tuning Range for Multi-Species Gas Detection, Hongyan Yu¹, Pengfei Wang¹, Junping Mi¹, Xuliang Zhou¹, Jiaoqing Pan¹, Hui Wang¹, Liang Xie¹, Wei Wang¹; ¹*CAS Inst. of Semiconductors, China*. We report a 1.8 μm widely tunable distributed Bragg reflector (DBR) laser with an over 11 nm continuous tuning range. Simultaneous detection of methane and water is successfully demonstrated utilizing this laser.

Su2B.7 • 11:30

Mass-production Level 200-Gb/s 850nm VCSEL Array with up to 1.03-W/A Current-Light Slope Efficiency, Shun Yao², Zhaochen Lv², Wenjia Zhang¹, Qing Wang², Chenyu Liang¹, Jiangbing Du¹, Guangzheng Zhou², Hongyan Yu², Ying Li², Yang Zhang³, Zuyuan He¹, Zhiyong Wang²; ¹*Shanghai Jiao Tong Univ., China*; ²*Inst. of Laser Engineering, Beijing Univ. of Technology, China*; ³*Sino-semiconductor Photonics Integrated Circuit Co., Ltd, China*. We present the epitaxial growth of materials, wafer-level device fabrication and characterization of mass-production 200-Gb/s 850nm 1x4 VCSEL array with maximum current-light slope efficiency up to 1.03 W/A, operating at 25-Gb/s OOK and 50-Gb/s PAM4.

Su2C • Postdeadline Session II

Dahlia Room

10:30 -- 11:45

Presider: *ShiJian Su; South China Univ Tech, China*

Su2C.1 • 10:30

Mid-infrared plasmonic multispectral filters, Ang Wang¹, Yaping Dan^{1,2}; ¹*Shanghai Jiao Tong Univ., China*; ²*Xi'an Jiao Tong Univ., China*. We report that an integrated infrared spectral analyzer can be constructed by using Cr microhole arrays as multispectral filters. The transmission peak can be continuously tuned from 3.5 μm to 7.8 μm .

Su2C.2 • 10:40

Valley-locked directionality from a monolayer transition metal dichalcogenide enabled by plasmonic nanoantenna, Haitao Chen¹, Mingkai Liu¹, Lei Xu¹, Dragomir N. Neshev¹; ¹*Nonlinear Physics Center, Australian National Univ., Australia*. We propose and demonstrate a 2D materials-plasmonic system that could effectively enhance and separate emission from

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different valleys into opposite directions. The spin-locked directionality derives from the interference between different plasmonic modes

Su2C.3 • 10:50

A Wearable Motion Monitoring Fiber Sensor Based on Graphene, Min Qiao¹, Jinnan Zhang¹; ¹*Beijing Univ. Of Posts And Telecommunications, China*. We have fabricated wearable graphene-coated fiber sensor and achieved monitoring on soccer. Ultrahigh sensitivity, wide maximal sensing range, high reproducibility and fast response of the sensor show a wide application prospect in sports motions monitoring.

Su2C.4 • 11:00

C/L-band emission of InAs QDs monolithically grown on Ge platform, Wenqi Wei^{2,1}; ¹*Wuhan Univ., China*; ²*Inst. of physics Chinese academy of sciences, China*. The C/L-band light emission (1.53 μm -1.63 μm) of InAs/In_{0.25}Ga_{0.75}As quantum dots (QDs) epitaxially grown on Ge substrate by solid-source molecular beam epitaxy (MBE) is reported.

Su2C.5 • 11:10

Photodetector with a Nanowire Crossed Heterojunction, Xianguang Yang¹, Baojun Li¹; ¹*Inst. of Nanophotonics, Jinan Univ., China*. We report an ultraviolet-visible detector with a crossed heterojunction assembled from quantum-dot-doped polyaniline nanowires. The fabricated detectors show spectral response of 365 to 550 nm, external quantum efficiency of 10⁵ %, responsivity of 10³ A/W.

Su2C.6 • 11:20

GaN-based Micro-LEDs and Its Applications, Zhaojun Liu¹, Chengfeng Qiu¹, Xiaowei Sun¹; ¹*South Univ Of Science & Tech of China, China*. In this report, we will introduce the design and fabrication of GaN-based active matrix Micro-LEDs by integrating Micro-LED arrays on Si backplane using fine-pitch flip-chip bonding process. Applications for advanced displays and communications will also be discussed.

Su2C.7 • 11:30

Fiber-based Time-division Fluorescence Detecting System for PCR-based White Spot Syndrome Virus Measurement, Zhengwei Chen^{3,1}, Fang Zhang³, Jun Huang², Yang Zhou², Guili Dong², Huijie Huang^{3,1}; ¹*Univ. of Chinese Academy of Sciences, China*; ²*Zhejiang Univ. of Science and Technology, China*; ³*Laboratory of Information Optics and Opto-electronical Technology, Shanghai Inst. of Optics and Fine Mechanics, Chinese Academy of Sciences, China*. Fluorescence detecting system and PCR-based method are designed to measure White Spot Syndrome Virus (WSSV). The determination coefficient of the standard curve is 0.995 that meets the need of WSSV quantitative test in shrimp cultivation.