Room D (Capri), 2F | Chair: Hun-Sik Kang (ETRI)

We3D | July 1 (Wed), 2026

Advanced DSP for Transmission and Sensing | 15:00-16:30

We3D-1 Invited 15:00-15:30

Ultrahigh-Capacity Coupled-Core MultiCore Fiber Transmission Systems enabled by Advanced DSPs

Akira Kawai, Kohki Shibahara, Masanori Nakamura, Megumi Hoshi, Takayuki Kobayashi, Yutaka Miyamoto
NTT, inc.

In this presentation, we provide an overview of CCFbased SDM-MIMO transmission exceeding 10 Tb/s/λ, with an emphasis on DSP. We introduce an experimental demonstration of over-14 Tb/s/λ transmission with coding technique robust to mode-dependent loss.

We3D-2 15:30-15:45

Integrated Temperature and Vibration Sensing and Communication based on Weakly Coupled FMFs

Jiarui Zhang[1,2], Gang Qiao[2], Mingqing Zuo[2], Bowen Lin[2], Yu Yang[2], Yiran Wang[2], Chengbin Long[2], Siyuan Liu[2], Yongqi He[2], Zhangyuan Chen[2], Juhao Li[2,3]
[1]China Telecom, [2]Peking University,[3]Peng Cheng Laboratory

We demonstrate simultaneous vibration and temperature monitoring using telecom signals from a 32-Gbaud 16QAM MDM system, achieved by adjusting the DSP algorithms, without the need for additional spectrum or fiber sources.

We3D-3 15:45-16:00

Shared-Wavelength Integrated Communication and Sensing Scheme over Single-Mode Fiber

Jiajia Shen[1], Suiyao Zhu[2], Jiajun Ji[1], Tingyu Fu[1], Suhua Wang[1], Fengge Wang[3], Mingyi Gao[1]
[1]Soochow University, [2]Harbin Institute of Technology, [3]Zhongyuan University of Technology

We propose a shared-wavelength integrated sensing and communication (ISAC) scheme. This scheme achieves vibration reconstruction through phase-modulated probe signals and continuous communication signals, simultaneously realizing interference-free multi-carrier transmission and high-signal-to-noise-ratio (SNR) sensing demodulation.

We3D-4 16:00-16:15

Monitoring of Polarization Fluctuation Speed with Dual-Branch Delay Interferometers

Shiro Ryu[1], Kenya Hitomi[2], Taku Saito[2]
[1]Meiji University, [2]SoftBank Corp

We propose a dual-branch delay interferometers to measure the speed of polarization fluctuation. The proposed system estimates the speed of polarization fluctuations on the Poincaré sphere, as demonstrated in laboratory and 142-km field experiments.

We3D-5 16:15-16:30

Domain Generalization Framework for Robust Linear and Nonlinear SNR Monitoring in Unseen Optical Network Conditions

Qi Hu[1], Hongcheng Wu[1], Haohua Wang[1], Bang Yang[2], Gai Zhou[3], Yanfu Yang[2], Yang Li[4], Faisal Nadeem Khan[1]
[1]Tsinghua University, [2]Harbin Institute of Technology, [3]Guangdong University of Technology, [4]Chinese University of Hong Kong

We propose a domain generalization framework for robust linear and nonlinear SNR monitoring under unseen network conditions without requiring any retraining of ML model, achieving MAEs for linear and nonlinear SNR of 0.65-dB and 0.78-dB, respectively.