We2G-1 Invited 13:15-13:45

All-Fiber Laser via Hybrid Optical Amplifier in the NIR-III Region for Multi-Contrast Photoacoustic Microscopy

Yitian Tong[1], Huajun Tang[1], Jixiang Chen[1], Najia Sharmin[1], Jinge Wei[1], Kevin K. Tsia[1,2], Kenneth K.Y. Wong[1,2]
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We report an all-fiber NIR-III laser leveraging flexible optical parametric conversion. The source generates switchable 1725-nm/1930-nm pulses with programmable pulse widths, 1.5-μJ pulse energy, and frequencies up to 100 kHz, enabling bond-selective, multi-contrast photoacoustic microscopy.

We2G-2 13:45-14:00

Quantum Induced-Coherence Interferometry Using a SPAD Array for High-Resolution Infrared Depth Profiling

Hyung Beom Kim[1,2], Tae Yeong Park[1,2], Myeong Soo Kang[1], Hongki Yoo[1], Hee Su Park[1,2]
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We present a quantum induced-coherence tomography based on visible-infrared interband entangled photon pairs.

We2G-3 14:00-14:15

Fixed-Decoder Autoencoder for Robust Nanoscale Displacement Extraction in Optical Coherent Sensing

Md Nazmul Hussain, Ayumi Ito, Yasuhiro Okamura, Masanori Hanawa
University of Yamanashi

A Fixed Decoder Autoencoder reconstructs nanoscale displacement waveforms from noisy optical interferometric phase measurements. Physically guided by an Exponentially Modified Gaussian kernel, the system achieves 99% linearity over 2.17-15.02 nm range, suitable for biomedical metrology.

We2G-4 14:15-14:30

A Short-Time Fourier Transform Based Spatiotemporal Continuity Filter for Distributed Acoustic Sensing

Zhang Yuchen[1,2], Chen Chen[2], Liu Yifan[3], Liu Zexi[3], Gao Kan[3], Wang Zhaoyong[2], Wei Fang[2], Cai Haiwen[2]
[1]Fudan University, [2]ZhangJiang Laboratory, [3]Chinese Academy of Sciences

A smoothing filter based on the short-time Fourier transform and spatiotemporal continuity for DAS signal post-processing is proposed for the first time. A 9.86 dB SNR enhancement is achieved for 125 Hz vibration signal at 62 km.

We2G-5 14:30-14:45

High Range Resolution Si SLG FMCW LiDAR with Wideband DFB LD Predistortion Using OnChip Interferometer

Shota Nawa, Mikiya Kamata, Takemasa Tamanuki, Toshihiko Baba
Yokohama National University

We demonstrate Si photonics SLG FMCW LiDAR integrated with an interferometer including a long delay line for injection current predistortion of DFB LD. 167-GHz frequency sweep achieves record high range resolution of 0.47 mm.