

Room A (Grand Ballroom 1), 2F

Chair: Benedikt Geiger
(Karlsruhe Institute of Technology)

Tu1A

Advanced Optical Technologies

June 30 (Tue), 2026

08:30-10:00

Tu1A-1

08:30-08:45

Feedback-Free Photonic Reservoir Computing Enabled by a Commercial SOA

Suhua Wang, Tingyu Fu, Jiajun Ji, Jiajia Shen, Mingyi Gao
Soochow University

We present a compact, scalable photonic reservoir computing leveraging intrinsic SOA free-carrier recovery for memory. This loop-free architecture achieves NMSEs of 0.023 and 0.048 on Mackey-Glass and Santa Fe benchmarks, eliminating complex feedback requirements.

Tu1A-2

08:45-09:00

Reservoir Computing Equalization for Long-Distance Indoor Optical Wireless Communication

Cuiwei He¹, Chen Chen², Chengwei Fang³, Ke Wang³, Christina Lim⁴

¹Japan Advanced Institute of Science and Technology, ²Chongqing University, ³RMIT University, ⁴University of Melbourne

We demonstrate a 16 m indoor optical wireless link using a fluorescent fiber antenna, silicon photomultiplier, and reservoir computing equalization. The equalizer mitigates bandwidth limitation and nonlinear distortion, enabling reliable 200 Mbps transmission.

Tu1A-3

09:00-09:15

Simultaneous Compensation of Chromatic Dispersion and SPM in A-RoF Transmission

Kaito Okada, Toshiaki Shitaba, Akihiro Tanabe, Youichi Fukada, Ryo Miyatake, Masayoshi Sekiguchi, Tatsuya Shimada
NTT, inc.

We propose a method to simultaneously compensate for both chromatic dispersion and self-phase modulation and demonstrate a single span extension of 35% over the conventional method, indicating promise in increasing analog radio-over-fiber distances.

Tu1A-4

09:15-09:30

All-Optical MFM System Using Phase-Locked P1 Semiconductor Laser Dynamics

Yu-Huai Chang, Hao-Wen Weng Lin, Yu-Han Hung
National Sun Yat-Sen University

We propose a photonic microwave frequency measurement (MFM) system utilizing phase-Locked PeriodOne (P1) dynamics of semiconductor lasers. Target microwave frequencies are estimated via optical injection power with errors below ± 60 MHz across 16.5–21 GHz.

Tu1A-5

09:30-09:45

High-Capacity Digital Coherent Complex Optical Reservoir Computing with Long Optical Fiber Loop

Toshihiko Hirooka, Masataka Nakazawa
Tohoku University

We propose high-capacity digital-coherent reservoir computing using long fiber-loop recirculation and FPGA-based nonlinear processing. High-speed coherent pulses enable large-scale complex-valued computations. Performance improvement in NARMA-10 prediction and dispersion compensation by increasing neurons are numerically demonstrated.

Tu1A-6

09:45-10:00

Generating a Large Time-Bandwidth Product Linear Chirp Signal based on Dual-OFCs

Xiaonan Chen, Liao Chen, Yufan Du, Ye Tian, Rongwu Liu, Yang Liu, Chi Zhang, Xinliang Zhang
Huazhong University of Science and Technology

We utilize a vernier dual-OFCs to generate a chirped radio-frequency signal with a duration of 50 μ s, a 3dB bandwidth of 117.4GHz and a TBP of 3.75×10^7 to enhance the performance of radar system.