

Room D (Capri), 2F

Chair: Sheng-Kwang Hwang
(National Cheng Kung University)

Tu1D

June 30 (Tue), 2026

Photonic Devices in Wireless Optical Communications

08:30-10:00

Tu1D-1 Invited 08:30-09:00

Terrestrial Wireless Optical Communication Integrated into a Photonic Module

Devin Brinkley, Tymon Barwicz, Jean-Laurent Plateau, Ondrej Čierny, Greg Allan, Danielius Kramnik, Sanam Mozaffari, Michael Caverley
Taara Connect

We present a silicon photonic module incorporating an Optical Phased Array for terrestrial wireless optical communication. The architecture enables solid state steering, atmospheric correction, wavefront sensing and bidirectional communication in a compact, cost-effective device.

Tu1D-2 09:00-09:15

Amplitude-Modulated Overhead Assisted Magnitude-Squared Cross-Correlation Frame Synchronization for Pilot-Aided DSP in Coherent Optical Satellite Communication

Shoma Tateno, Hidemi Noguchi, Kohei Hosokawa
NEC Corp.

We proposed amplitude-modulated overhead assisted magnitude-squared cross-correlation frame synchronization, which expands the FOC margin by 22.5 times compared to the conventional cross-correlation method and enables robust practical pilot-aided DSP for inter-satellite communication with the Doppler-shift.

Tu1D-3 09:15-09:30

65-dB Link-Budget C-Band Free-Space Optical Transmission Using a Directly Modulated InP-PCSEL

Shota Ishimura¹, Takeshi Aoki^{2,3}, Takuya Inoue³, Yuhki Itoh^{2,3}, Kosuke Fujii², Makoto Ogasawara^{2,3}, Hiroyuki Yoshinaga^{2,3}, Yusuke Sawada^{2,3}, Shun Kimura², Naoki Fujiwara^{2,3}, Hideki Yagi², Masaki Yanagisawa², Hidenori Takahashi¹, Takehiro Tsuritani¹, Ryohei Morita³, Masahiro Yoshida³, Menaka De Zoysa³, Kenji Ishizaki³, Susumu Noda⁴

¹KDDI Research, Inc., ²Sumitomo Electric Industries, Ltd., ³Kyoto University, ⁴Kyoto University Institute for Advanced Study

We demonstrate C-band free-space optical transmission using a directly modulated InP photonic-crystal surface-emitting laser with receiver-side EDFA preamplification, achieving 1-Gbaud OOK transmission with a 65-dB link budget.

Tu1D-4 09:30-09:45

200-Gb/s/1.2-km Free-Space Optical Links Employing a Triplet-Lens System and Metasurfaces

Chun-Cheng Liang, Wei-Zhi Jiang, Yen-Chen Chen, Yen-Jen Chen, Hai-Han Lu
National Taipei University of Technology

A 200-Gb/s/1.2-km free-space optical link is successfully demonstrated using WDM-PAM4 scheme with triplet-lens system and metasurfaces, enabling efficient beam collimation, high deflection efficiency, and large angle deflection, paving the way for 6G optical wireless communications.