

Room C (Grand Ballroom 3), 2F

Chair: Takahiro Suzuki (NTT, inc.)

**Tu1C**

June 30 (Tue), 2026

AI-Native Autonomous Optical Access Networks

08:30-10:00

**Tu1C-1**

**08:30-08:45**

**Power-Efficient OLT Architectures Enabled by Traffic-Aware AI**

Yuanqiu Luo<sup>1</sup>, Dezhi Zhang<sup>2</sup>, Yang Lu<sup>3</sup>, Dekun Liu<sup>3</sup>, Frank Effenberger<sup>1</sup>

<sup>1</sup>Futurewei Technologies, <sup>2</sup>State Key Laboratory of Optical Fiber and Cable Manufacture Technology, <sup>3</sup>Huawei Technologies

This paper proposes a traffic-aware and AI-enabled OLT architecture that jointly optimizes power consumption of external interfaces and internal high-speed resources. It enables demand-adaptive and energy-proportional operation for next-generation passive optical networks.

**Tu1C-2**

**08:45-09:00**

**Noise & Interference Loading for Capacity on Demand with Fine-Tuned LLM-Assisted Optical Access Network Automation**

Geyang Wang, Lan Zeng, Lian-Kuan Chen  
The Chinese University of Hong Kong

We propose an LLM-powered digital twin that employs precoding to reshape noise and interference in an automated optical network. A 50-Gb/s, 20-km experiment demonstrates ~4.3-dB sensitivity gain and significantly reduced BER.

**Tu1C-3** **Invited**

**09:00-09:30**

**Resilience Enhancement of Optical Networks via Collaborative Resource and Data Sharing**

Sugang Xu<sup>1</sup>, Yusuke Hirota<sup>1</sup>, Subhadeep Sahoo<sup>2</sup>, Noboru Yoshikane<sup>3</sup>, Xiaocheng Zhang<sup>4</sup>, Angela Mitrovska<sup>5</sup>, Behnam Shariati<sup>5</sup>, Yuki Yoshida<sup>1</sup>, Taiga Suzuki<sup>1</sup>, Masaki Shiraiwa<sup>1</sup>, Sifat Ferdousi<sup>2</sup>, Takehiro Tsuritani<sup>3</sup>, Shigenari Suzuki<sup>4</sup>, Pooyan Safari<sup>5</sup>, Johannes K. Fischer<sup>5</sup>, Ronald Freund<sup>5,6</sup>, Massimo Tornatore<sup>7</sup>, Biswanath Mukherjee<sup>2,8</sup>, Yoshinari Awaji<sup>1</sup>

<sup>1</sup>NICT, <sup>2</sup>University of California, <sup>3</sup>KDDI Research, Inc., <sup>4</sup>NTT Docomo Business, <sup>5</sup>Fraunhofer HHI, <sup>6</sup>Technical University of Berlin, <sup>7</sup>Politecnico di Milano, <sup>8</sup>Soochow University

To enhance the resilience of network-cloud ecosystems, we investigate two collaborative approaches: (i) multi-entity optical network resource sharing for rapid recovery, and (ii) dataset sharing across optical network testbeds to support AI/ML-driven resilience improvement.

**Tu1C-4** **Invited**

**09:30-10:00**

**Virtualization and PHY Softwarization in Optical Access Networks**

Takahiro Suzuki, Jun-ichi Kani, Tatsuya Shimada  
NTT, inc.

This invited talk discusses the evolution of access networks towards virtualization and PHY softwarization. It presents latest technological progress and remaining issues toward partial virtualization and full software implementation.