

Room A (Grand Ballroom 1), 2F

Chair: Songnian Fu (Guangdong University of Technology)

Mo2A

June 29 (Mon), 2026

Optical Sensing & Converged Systems

14:45-16:15

Mo2A-1 Invited 14:45-15:15

High-Speed and Intelligent Optical Access Networks: Advancing Coherent PON and Distributed Fiber Sensing Toward the Next-Generation Broadband Era

Zhensheng Jia
CableLabs

This paper reviews the recent advancement of Coherent PON (CPON) and Distributed Fiber Optic Sensing (DFOS), highlighting recent 100G specification releases and the transformative potential of intelligent, high-speed access networks for the next-generation broadband era.

Mo2A-2 15:15-15:30

Integrated Unidirectional Forward Sensing and Communication over a Parallel HCF-SMF Link

Jiwei Xie, Yiwon Zhang, Zexu Liu, Weiqi Lu, Haojie Zhu, Puzhen Yuan, William Shieh
Westlake University

We propose and experimentally demonstrate a joint communication and unidirectional forward sensing scheme employing a parallel HCF-SMF link. Forward sensing with ~35-m accuracy over 1-km and 50-GBaud PAM-4 transmission have been achieved simultaneously.

Mo2A-3 15:30-15:45

Rapid State-of-Polarization Change Point Detection via Minimum Lossy Coding Length

Shaobo Han, Ming-Fang Huang, Yue-Kai Huang, Philip N. Ji
NEC Laboratories America, Inc.

We propose a rapid state-of-polarization disturbance change-point detection and localization method using lossy coding length of kernel features. Field experiments validate accurate detection of subtle changes and precise localization, enabling reliable fiber identification and monitoring.

Mo2A-4 15:45-16:00

Field Trial of Urban Monitoring over Telecom Networks with Rayleigh-based DTSS

Jian Fang¹, Ming-Fang Huang¹, Scott Kotrla², Jeffrey A. Mundt², Yaowen Li¹, Jamie Lynn¹, Philip Ji¹, Shuji Murakami¹, Ting Wang¹
¹NEC Laboratories America, Inc., ²Verizon

We present field trial on urban monitoring over telecom networks using Rayleigh-based distributed temperature/ strain sensor (DTSS), showing the capability of detecting subtle infrastructure signatures including manhole locations, road traffic, sprinklers and underground leakage events.

Mo2A-5 16:00-16:15

A Low-cost Wavelength Selectable Distributed Vibration Sensor with a Unified Sensitivity for the Whole Route Security Monitoring in PONs

Yaowen Li¹, Benyuan Zhu², Jian Fang¹, Shuji Murakami¹, Philip N. Ji¹, Ting Wang¹, Paul S. Westbrook², Zhou Shi², Ken Feder²
¹NEC Labs America, ²Lightera Labs

We demonstrate a low-cost wavelength selectable distributed vibration sensor to monitor the whole routes in a 1x32 PON architecture with a unified sensitivity. The results obtained from the lab and a field testbed are presented.