Room D (Capri), 2F | Chair: Asuka Matshushita (NTT, inc.)

**Th1D** | July 2 (Thu), 2026

Long-Haul Transmission Enabling Technologies | 08:30-10:00

**Th1D-1** **08:30-08:45**

### 1.28 Tbit/s/λ, 16 QAM, 3,200 km Digital Coherent Nyquist Pulse Transmission Using Multi-Carrier Method

Ryota Endo, Masato Yoshida, Toshihiko Hirooka, Keisuke Kasai, Masataka Nakazawa
Tohoku University

We present an ultrahigh-speed coherent Nyquist pulse TDM transmission in a fully digital scheme. A four-carrier, polarization-multiplexed 40 Gbaud, 16 QAM (1.28 Tbit/s/λ) signal was successfully transmitted over 3,200 km using a multi-carrier method.

**Th1D-2** **08:45-09:00**

### Spatially Informed Active Sampling for Grey-Box QoT Modeling with Field-Trial Validation

Xiaoshu Yu, Yihao Zhang, Hao Lin, Weisheng Hu, Qunbi Zhuge
Shanghai Jiao Tong University

We propose a spatially feature-aware active sampling framework to predict Q-factors of a 30-channel WDM system in a physics-informed manner. It achieves an MAE below 0.2 dB with stable convergence using fewer than 150 samples.

**Th1D-3** **Invited** **09:00-09:30**

### Colorless Detection of WDM Superchannel with a Frequency Comb-Based Local Oscillator

Di Che
Nokia Bell Labs

We propose colorless detection of WDM signals with neither demultiplexers nor laser wavelength control using a frequency comb as the local oscillator. The concept is demonstrated with single-shot reception of a THz-class superchannel highly tolerant to laser frequency drift.

**Th1D-4** **09:30-09:45**

### Techno-Economic and Power Analysis of Terrestrial Long-Haul C+C and C+L Systems

John D. Downie[1], Viacheslav Ivanov[2], Lidia Galdino[3], Tomasz Kolodziejczyk[4], Colin Wallace[5]
[1]Corning Research and Development Corp., [2]Corning SAS Suomen Sivulike, [3]Corning Optical Communications, [4]Corning Optical Communications, [5]Microsoft

We analyze the cost and power efficiency of C+C and C+L long-haul terrestrial systems for various fibers with different span lengths producing equal GSNR. Advanced fiber types enable lower system cost/bit and smaller carbon footprint.

**Th1D-5** **09:45-10:00**

### Numerical Evaluation of Error-Floor Behavior in Polar Codes with Ultra-Large Block Lengths for Optical Fiber Transmission

Mizuki Yamamoto[1], Gakuto Kanematsu[1], Yohei Koganei[2], Koji Igarashi[1]
[1]The University of Osaka, [2]1Finity Inc.

We numerically show that ultra-long polar codes exhibit no observable error floor even with 4-bit LLR quantization, while the same quantization significantly increases the error floor in LDPC codes.