Th2A-1 **10:15-10:30**

Modal-Decoupled Physics-Informed Digital Twin for Passive Integrated Photonic Reservoirs

Yihang Lai, Tian Zhang, Qi Chen, Zili Cai, Jubo Hao, Jian Dai, Kun Xu
Beijing University of Posts and Telecommunications

We propose a physics-informed method to establish a digital twin for passive integrated photonic reservoirs. By leveraging modal decoupling, our framework yields a 0.995 reconstruction accuracy with merely 120 nodes, outperforming conventional random reservoir networks.

Th2A-2 **10:30-10:45**

On-Chip Tunable Narrow Bandpass Filter for Terahertz Communication Systems

Ziwei Wang[1,4], Liao Chen[2], Lin Wu[1], Ming Luo[1], Tiancai Jiang[1], Chi Zhang[2], Jin Tao[1,3], Xinliang Zhang[2]
[1]China Information Communication Technologies Group Corporation (CICT), [2]Huazhong University of Science and Technology, [3]Peng Cheng Laboratory, [4]Hubei Optical Fundamental Research Center

We propose a 284 MHz narrow bandpass filter with tunability based on on-chip terahertz ring resonator and demonstrate terahertz communication demodulation with a bit error rate of 1.07×10^{-7}.

Th2A-3 **10:45-11:00**

Silicon Based High-Order Mode Filter with Cascaded Asymmetric Couplers

Guanyu Chen[1], Jian Wang[1], Duowei Zeng[2], Mengyuan Ye[2]
[1]Chongqing University, [2]China University of Geosciences Wuhan

A silicon high-order mode-pass filter using cascaded asymmetric directional couplers enables arbitrary higherorder mode selection. The TE_2 filter achieves 15 dB extinction across 1520–1580 nm.

Th2A-4 **11:00-11:15**

Fold-back Directional Coupler for Compact Photonic Circuit Layouts

Injoon Lee, Fumio Shohda, Kenichi Terao, Keita Mochizuki
Mitsubishi Electric Corporation

We theoretically and experimentally demonstrate a foldback directional coupler based on phase compensation structure. Leveraging the vertical dimension instead of the horizontal enables the effective arrangement of even extremely long devices in integrated photonic circuits.

Th2A-5 **11:15-11:30**

First Experimental Demonstration of SiN Waveguide 1×2 Power Splitters Based on Mosaic Structure

Keigo Fujimoto[1], Yasuhide Tsuji[2], Takeshi Fujisawa[1]
[1]Faculty of Science and Engineering Hosei University, [2]Graduate School of Engineering Muroran Institute of Technology

Mosaic-based 1×2 power splitter based on SiN waveguide is proposed and experimentally demonstrated, for the first time. Gradient direct binary search method greatly accelerates the optimization compared with conventional direct binary search method.

Th2A-6 **11:30-11:45**

Low-Loss and High-Uniformity 4×4 Silicon Nitride Multi-Mode Interference Coupler on a Glass-Based Photonic Platform

Jihyun Lee, Seokyoung Shin, Kyungjin Jo, Younghyun Kim
Hanyang University

We demonstrate a glass-based 4×4 SiN multi-mode interference coupler achieving 0.02–0.16 dB insertion loss and uniformity below 0.44 dB at 1310 nm, enabling scalable, low-loss photonic integration on glass substrates.