
# Optical Networks and Systems Symposium

## SYMPOSIUM CHAIRS AND CO-CHAIRS

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## SCOPE AND MOTIVATION

The past decade has witnessed explosively growing demand for ubiquitous connectivity, transporting Zettabytes of digital information produced by hundreds of billions of devices (smart phones, vehicles, robots, drones etc.). This trend will continue as we enter the era of artificial intelligence (AI) and quantum. Beside the growth in data volumes, emerging applications are posing greater challenges related to end-to-end performance in terms of security, reliability, energy efficiency, and deterministic latency. Such challenges urge substantial advances in optical systems and networks across all segments, from the edge (fixed and optical wireless access) and data centers up to the optical backbone. In particular, with the fast development of AI and its applications (e.g., large language models, self-driving), it is desirable to realize cost-effective AI service (training and inference) delivery with guaranteed latency. This entails the design of communication and computing integrated architectures in favor of reconfigurable optical interconnects, bandwidth and computing power orchestration and edge-cloud coordination, while benefiting from recent paradigms such as Software Defined Networking, Network Infrastructure and Function Virtualization, Data Analytics and AI, Cloud and Edge computing, and In-network computing. In addition, as quantum technologies develop at an unprecedented pace, optical networks will be required to provide support for services such as quantum key distribution (QKD) and distributed quantum computing. Optical communications challenges in turn appear, involving the required evolution in fiber and wireless sides for meeting the challenges identified. Finally, the expected traffic growth and the tight latency constraints dictated by new 6G services will also require a substantial evolution not only of the legacy radio-access networks but also of the architecture and the technology of the underlying mobile transport and access networks. Optics and electrooptical systems will be enablers for not only mobile 6G speeds but also novel optical interconnect technologies for future advanced antenna systems impacting transport and access network architectures. Integration of free-space optical communication technologies to the emerging 5G-and-beyond wireless networks in various indoor (e.g., data centers), terrestrial (e.g., mobile networks), space (e.g., inter-satellite, ground-to-satellite and deep space communication), and underwater settings (e.g., underwater sensing) will be a crucial challenge.

The Optical Networks and Systems Symposium aims to bring together researchers, practitioners, and technologists in this exciting era for the network infrastructure of the future hyperconnected world. Paper acceptance decisions will be based on novelty of the work, quality of the results, and clarity of the presentation.

## TOPICS OF INTEREST

The Optical Networks and Systems Symposium intends to showcase the latest developments in all research areas related to optical networks and systems. The Symposium cordially invites original contributions in, but not limited to, the following topical areas and others not explicitly listed but closely related:

· Optical wireless and fiber systems & networks for 5G and beyond

· Optical access systems & networks in support of cost-effective edge compute deployment

· Optical network architectures, design, and performance evaluation

· Elastic, flexible rate, and flexi-grid optical networks

· Space division multiplexing and multi-band optical networks

· Cross-layer design of optical networks

· Artificial intelligence and machine learning for optical systems & networks

· Energy-efficient optical networks

· Systems & networks for open and disaggregated optical transport

· Physical-layer-aware open and disaggregated optical networks

· Optical network testbeds and experiments

· Experimental data-driven optical networking

· Data analytics for optical networks

· Optical network control and management

· Digital twin in optical networks and streaming telemetry

· Software-defined optical networks including programmability, control, automation, and disaggregation

· Virtualization and slicing in optical networks

· Quantum optical systems and networks

· Coexistence of quantum and classical optical systems and networks

· Optical network security

· Optical network survivability and availability

· Optical network for inter- and intra-datacenter connectivity

· Optical interconnects for datacenters & high-performance computing

· Coding, modulation, and signal processing for optical systems

· Optical and wireless network convergence and mobile x-haul

· Radio-over-fiber

· Free-space optical (FSO) communications and networks

· Intersatellite and space-based optical systems & networking

· Visible light communications and networks

· Camera communications

· Optical wireless channel characterization

· Reliability and security of optical wireless communications

· Modulation and coding for optical wireless systems

· Multiple access techniques for optical wireless systems

· Visible light positioning

· Ultraviolet communications and networks

· Underwater optical communications

· Optical wireless vehicular networks

## IMPORTANT DATES

Deadline for paper submission: 1 April 2024

Date for notification: 1 August 2024

Deadline for final paper submission: 1 September 2024

## SUBMISSION INSTRUCTIONS

All papers for technical symposia should be submitted via EDAS through the following link:

https://edas.info/N31420