

OECC/PSC 2025 Keywords

O1. Core/Access/Data Center Networks and Subsystems

- Core/Metro Network and Subsystem
- Optical core/metro network architecture, design, control, and management
- Optical core/metro network reliability and protection & restoration
- Optical packet/burst/flow switching networks
- Optical cross-connects/add-drop multiplexers and switching subsystems Grid/cloud computing over optical networks
- Energy-efficient optical networks and technologies
- Access Network and Subsystem
- Optical access network architecture, design, protection, and management
- Access network disaggregation and virtualization
- Survivability techniques and operational issues for resilient access networks
- Future high capacity and long-reach access networks including Coherent PON, WDM PON, OFDM PON, TWDM-PON and hybrid PON
- Radio-over-fiber access networks
- Data Center (DC) Network, Converged Network and Subsystem
- Data center, in-building/in-home, local area, and storage area optical networks
- Optical xHaul networks
- Hybrid wireless-optical access networks including fixed mobile convergence and Metro access convergence
- Space and NTN(non-terrestrial network) networks
- Field trials, testbeds, and interoperability demonstrations of optical networks
- Artificial intelligence and machine learning for optical network design, control, and management
- End-to-end all photonics network; architecture, system design and enabling technologies
- Optical network security management

O2. Transmission Systems and Subsystems

- Transmission and propagation
- Laboratory and field transmission experiments including long haul, core, metro and data-center interconnect application
- Multiplexing and demultiplexing techniques including OTDM, OFDM, OCDM and SDM
- Free-space optical transmission
- Transmission impairments and their mitigations
- Modeling of transmission, of capacity or reach limits of transmission systems
- Quantum communication and quantum cryptography
- Digital signal processing, advanced modulation, coding and multiplexing
- Digital signal processing algorithms for optical communications
- Advanced modulation and demodulation for optical communications
- Coding and forward error correction for optical communications

- Artificial intelligence and machine learning for optical transmission systems and subsystems
- Transmission subsystems
- Optical transmitter and receiver subsystems
- Implementation of digital signal processing subsystems for optical communications
- Optical signal processing subsystems for optical communications

03. Optical Fibers, Cables, Fiber Devices and Fiber Sensing

- Fibers & Cables for Communication
- Fiber design, fabrication and characterization
- Fiber cabling, installation, and maintenance
- Fibers for space division multiplexing
- Hollow core and microstructured fibers
- Fibers for optical interconnection
- Materials for fibers
- Fiber based Devices
- Fiber/waveguide amplifiers and lasers
- Fiber gratings
- Fiber based devices for space division multiplexing
- Connectors, splicing and interconnection technology
- Fiber sensing and other applications
- Distributed fiber optical sensing, fibers and fiber devices for sensing
- Fiber sensing application incl. environmental monitoring using optical network
- Fiber characterization and methodology
- Fibers for high power applications
- Fibers for nonlinear optical processing
- Other novel fibers, fiber devices and applications

04. Optical Active Devices and Modules

- Photonic integration
- Photonic integrated circuits
- Si photonic and heterogeneous platform
- Photonics-Electronics integration
- Packaging technology of photonic devices and circuits
- Advanced active devices
- Semiconductor lasers, optical amplifiers, and light emitting diodes
- Optical modulators
- Photodetectors
- Optical sensing and processing devices
- mm/THz devices
- New functional active devices
- Novel materials and structures
- Novel photonic materials for active devices

- Si/Ge, polymer, and novel III-V based active devices
- Quantum well, quantum dot, and nano-structured photonic devices
- Photonic crystal, topological, and related devices

O5. Optical Passive Devices and Modules

- Photonic integration
- Photonic integrated circuits
- Si photonic and heterogeneous platform
- Photonics-Electronics integration
- Packaging technology of photonic devices and circuits
- Advanced passive devices
- Planar lightwave circuits (PLCs)
- Optical filters, demultiplexers, demodulators, equalizers, programmable circuits/filters, dispersion compensators, and other signal conditioning devices
- Optical polarization control devices, polarizer, rotator, and polarization beam splitter
- Optical switches and channel selecting/routing devices for photonic networks
- Optical isolator and circulator
- Spatial division multiplexing (SDM) waveguide devices
- Tapered and grating waveguides for optical coupling
- Free-space optics including optical micro-electro-mechanical systems (MEMS) and liquid crystal devices for photonic networks
- Thin film lithium niobate passive devices
- Flat optics and meta surface devices
- Emerging non-telecom applications including sensing and imaging
- Novel materials and platform for passive devices
- Micro- and nano-optics and related devices
- Emerging materials and fabrication method for passive photonic platforms
- Optical printed circuit board

P1. Photonic Switching Devices, Systems and Networks

- Photonic switching devices and building blocks
- Integrated photonic technologies for switching subsystems and modules
- Silicon photonic switching devices using monolithic and heterogeneous integration technologies
- Nanophotonic metamaterial and plasmonic switching devices
- Novel materials and phenomena for switching
- Optical switches, tunable devices, and wavelength-selective switches for routing
- Optical switches for space/mode division multiplexing
- Photonics for switching and DC networks
- On-chip optical interconnection and networking
- On-board optics and co-packaged optics for high-capacity interconnects
- Parallel data links and space division multiplexing for high-density interconnection
- Large-scale switching technologies for data center (DC) and high-performance computing (HPC) systems

- Photonic switching systems and networks
- Switching systems, architectures, and network integrations
- Optical network design, control, management, and security
- Machine learning in optical communication networks
- Software defined networking (SDN) and OpenFlow/GMPLS
- Switching technologies for SDM networking
- Availability/reliability/disaster recovery
- Inter- and hyper-scale intra-DC networks
- Photonic network testbeds and field trials
- Converged mobile and optical access networks
- Fog/edge computing infrastructure and applications
- Network function virtualization (NFV)
- Internet of Things (IoT) aware systems and applications
- Advanced modulation and coding/decoding techniques

P2. Photonics for Computing and Deep Learning Applications

- Photonic devices for innovative computing
- Silicon photonic and nanophotonic devices for computing applications
- Optical signal processing devices
- Microwave photonic devices and systems
- Ising machines and building blocks
- Photonic ASIC/FPGA for computing
- Programmable, reconfigurable photonics
- Optical memory and nonvolatile photonic devices
- Photonics for neuromorphic computing and deep learning
- Photonics in neuromorphic computing and machine learning devices
- Optical neural networks and reservoir computing
- Highly parallelized scalable photonic computing architectures and devices
- Deep learning for photonic device and applications
- Optical nonlinear activation devices
- Optical transformer
- Photonics for quantum computing and communication
- Photonic quantum computing
- Photonic quantum communication
- Photonic quantum information processing
- Single-photon and quantum entangled photon-pair sources
- Photonic quantum random walk
- Photonic quantum cryptography
- Photonic quantum random number generators