

## Call for Papers

### Track 4 – WIRELESS & OPTICAL COMMUNICATIONS: FUNDAMENTALS AND PHY

#### Track Chairs:

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#### Scope and Motivation:

The track on Wireless & Optical Communications: Fundamentals and PHY covers all aspects on theory and practice of wireless communications and optical communications. In particular, topics related to current and future wireless communication systems, optical communications, and their integrations are encouraged. In addition, papers on physical layer (PHY) techniques, PHY-related network analysis and design, cross-layer optimization techniques, field trials and applications, fundamental analysis for wireless/optical communication systems are of special interest.

#### Main Topics of Interest:

This track seeks original contributions in the following areas, as well as others that are not explicitly listed but are closely related

- Beyond 5G/6G mobile communications
- Advanced modulation techniques (OFDM, multi-carrier modulation, and waveform design) for wireless/optical communications
- Optical wavelength-division, time division, and code-division multiplexing (WDM, OTDM, OCDM)
- Antennas and beamforming techniques
- Cell-free massive MIMO, Hybrid beamforming techniques
- Coding, modulation and signal processing techniques for wireless/optical systems
- mmWave/Tera-hertz communication techniques
- Orbital angular momentum (OAM)-based wireless/optical communications
- Dual function radar communication techniques
- Machine-learning techniques for wireless/optical communications
- AI and data analytics for wireless/optical communications
- Spectrum sharing/Cognitive radio techniques for future wireless communication systems
- Drone/UAV communications, Non-terrestrial wireless communications
- Wireless power transfer and simultaneous wireless information and power transfer (SWIPT)
- Green communications & Energy efficiency in wireless/optical systems
- Information theoretic aspects of wireless/optical communications
- Channel modeling, estimation, and equalization techniques for wireless/optical communications
- Fog networks, contents caching, and edge computing techniques
- Non-orthogonal multiple access (NOMA) & various multiple access techniques
- Grant-free access and coded ALOHA
- Massive IoT/M2M and wireless sensor networks
- Interference management (coordination, cancellation, alignment, and exploitation) techniques
- Physical-layer security & Anti-jamming techniques
- Positioning and localization techniques
- Signal processing for wireless/optical communications
- Elastic, flexible rate and flexi-grid optical networks
- Optical wireless (infra-red, visible, and ultra-violet light) communications and networks
- Optical technologies, components, and sub-systems for telecom networks
- Optical network control and management
- Optical networks and systems for cloud and edge-computing
- Optical networks and systems standards
- Optical network technologies, architectures, design and performance evaluation
- Innovations in optical X-haul networks for 5G and beyond and fixed-mobile convergence
- Optical vehicular networks
- Radio-over-fiber systems
- Software defined networking (SDN) for optical networks
- Underwater optical communications
- Optical access networks (PONs, AONs, and FTTx architectures)
- Optical networks and systems for IoT and smart grids
- Radio resource allocations

- Intelligent reflecting surface and ambient backscatter communications
- Inter-cell interference coordination and coordinated multi-point (CoMP)
- Cross-layer optimization techniques for wireless/optical systems