Special Issue

Digital Twin Modeling and Self-Optimization for Ultra-Wideband Optical Networks

Message from the Guest Editor

Optical networking is crucial for connecting mobile, satellite, and marine systems, enabling ultra-high-speed data transmission. Its complex technologies require high reliability and present operational challenges. The application of digital twins in the maintenance of optical networks is gaining global interest. This technology leverages optical systems' sensing capabilities to create dynamic models, enhancing simulation and optimization. By digitizing networks, we can address operational challenges more efficiently. This Special Issue invites original research on digital twin modeling and self-optimization in ultra-wideband optical networks. Researchers are encouraged to submit relevant contributions:

- Digital twin-based optical network management and control architecture.
- Physical layer self-sensing technologies for optical signal feature parameters and optical signal quality.
- Precise real-time simulation modeling of ultra-wideband (e.g., C+L+S) fiber optic transmission systems driven by mechanism–data dual approaches.

Guest Editor

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Deadline for manuscript submissions

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Message from the Editor-in-Chief

You are invited to contribute a research article or a comprehensive review for consideration and publication in *Photonics* (ISSN 2304-6732). *Photonics* is an online open access journal covering both the fundamental and applications of optics and photonics. *Photonics* strives to provide an avenue to allow authors to disseminate their scientific findings—both theoretical/ simulations and experimental works—in highly accessible peer-reviewed journal publications. The manuscript in *Photonics* will be handled with quick turnaround production processing time. We welcome authors to submit their manuscripts for publications in *Photonics*. Our goal in *Photonics* is to enable fast dissemination of high impact works to the scientific community.

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