Call for Papers

IEEE Journal of Selected Topics in Quantum Electronics
Special Issue on Advances in High-Speed Intensity Modulation and Direct Detection Technologies

Guest Editors
Dr. Robert Borkowski (Primary GE), *Nokia Bell Labs, USA*, robert.borkowski@nokia-bell-labs.com
Dr. Guo-Qiang Lo, *Advanced Micro Foundry, Singapore*, logq@advmf.com
Dr. Shinji Matsuo, *NTT Corporation*, Japan, shinji.matsuo@ntt.com
Dr. Ying Zhao, *Aloe Semiconductor*, USA, yzhao@aloesemi.com
Dr. Chen Zhu, *Bytedance*, China, zhuchen.eo@bytedance.com

Scope and Topics

Driven by AI compute and datacom demands, the ecosystem for 200 Gbit/s per lane intensity modulation/direct detection (IM/DD) technology is becoming a reality. However, the next doubling to 400 Gbit/s per lane (400G) presents significant technological challenges, including the further extension of component bandwidths, as well as power- and cost-per-bit efficiency aspects. As a result, substantial research efforts are required to develop the next generation 400G systems, which must be capable not only of delivering high data rates but also of maintaining a competitive edge over increasingly leaner versions of coherent technologies optimized for short link distances. Building upon the foundations of previous JSTQE special issues, such as *Optical Detectors* (2022) and *Advanced Modulators and Integration Beyond Si and InP-based Platforms* (2024), the **IEEE Journal of Selected Topics in Quantum Electronics** invites manuscript submissions demonstrating recent ***Advances in High-Speed Intensity Modulation/Direct Detection Technologies***. The purpose of this special issue of JSTQE is to highlight the progress and trends leading toward or beyond 400G intensity modulation and direct detection systems. Areas of interest for the special issue include, but are not limited to:

- Ultrabroad-bandwidth optical components supporting ultrahigh symbol rates
- Electronic subsystems, including drivers, TIAs, DACs, ADCs, electronic (de)multiplexers
- High-speed packaging and electrical interfacing
- Solutions aiming at power-per-bit or cost-per-bit efficiency
- New device materials, structures and architectures
- Integrated photonics solutions supporting 400G lanes
- Optical modulation and reception schemes, signal multiplexing and demultiplexing
- Viable modulation formats and coding techniques
- Impairment modelling, analysis and compensation
- Broadband signal integrity in photonic applications
- Digital or optical signal processing for ultrahigh symbol rates
- Transceiver and system design
- Extended-reach solutions for high-speed IM/DD
- AI-driven optimization of component reliability and system margins

Submission Guidelines

Submissions will be reviewed in accordance with the normal procedures of the Journal and papers must be formatted according to the Information for Authors found at:
https://ieeephotonics.org/publications/journal-of-selected-topics-in-quantum-electronics/

- Manuscript and Graphical Abstract Submissions should be made online at https://ieee.atyponrex.com/journal/jstqe-pho**.** Graphical abstracts are strongly suggested.
- Select the paper type "**Special Issue on Advances in High-Speed Intensity Modulation**

and Direct Detection Technologies”

Important Dates
Open for Submissions: October 1, 2025
Submission Deadline: April 1, 2026
Tentative Publication: Jan/Feb 2027
EARLY ACCESS: *DOI-citable articles will be published online after acceptance upon submission of final files and rights selection – sometimes well in advance of issue publication*.

For further information, contact the JSTQE Editorial Office:
Irene Hendricks, Journal Administrator
Email: i.hendricks@ieee.org