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Frontier of Quantum Devices for Quantum Technologies

Guest Editors:

Prof. Dr. Quanyong Lu

Prof. Dr. Qijie Wang

Prof. Dr. Fengqi Liu

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Message from the Guest Editors

Quantum science and technology are enabling a new frontier in computing, communication, and sensing, leading to the next era of technology revolution. As the building block for quantum technology, quantum devices such as lasers, detectors, modulators, single photon sources, etc. are seeing tremendous development.

These fast-developing technologies are pushing quantum devices including quantum cascade lasers, superlattice detectors, and single-photon sources as ideal building blocks for future quantum sensing, communication, and imaging. This Special Issue aims to present the latest theory and design and state-of-the-art developments for quantum devices and their applications. Topics include but are not limited to:

- New breakthroughs in quantum devices;
- Theories and designs of quantum devices;
- Nonlinear optical effects in quantum devices;
- Single-photon generation and detection;
- Power scaling of lasers;
- Frequency combs;
- Integrated photonic circuits;
- Short-pulse generation;
- High-speed modulated lasers;
- Topological engineered quantum devices;
- Novel-material-based quantum devices;
- On-chip quantum sensing applications;
- Quantum communication applications.

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