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Quantum Optics: Trends and Challenges

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Message from the Guest Editors

The entanglement between photons has spurred new perspectives for defining, encoding, manipulating, and transmitting information, which laid the foundation of the burgeoning field of quantum communication and computation. Entwined with the development of quantum information, quantum optics has unveiled a host of unprecedented science and technologies that are impossible in the classical world.

The topics of this Special Issue include but are not limited to:

- What are the boundaries and limitations of these new quantum-enhanced technologies?
- In what regime would sensing benefit from a nonclassical light source? How do we best leverage entanglement or the non-classicality of an electromagnetic field in a particular sensing task?
- What is limiting our quantum communication capability and how do we resolve that?
- What is the universal performance metric for quantum computing (QC) that can unite photonic QC and other physical platforms?
- Combining continuous variable and discrete variable encodings in the context of photonic quantum information for advanced capabilities and improved scalabilities?

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Message from the Editor-in-Chief

The concept of entropy is traditionally a quantity in physics that has to do with temperature. However, it is now clear that entropy is deeply related to information theory and the process of inference. As such, entropic techniques have found broad application in the sciences.

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