Special Issue

Topological Photonics and Axion Electrodynamics

Message from the Guest Editors

Topological properties play a fundamental role in many physical phenomena. One of the examples is the recently discovered novel phase of matter called topological insulators. These unique materials can be characterized by a new organizational principle known as a topological order. The discovery of the quantum spin Hall insulator and topological insulators has spawned much interest and activity in the study of nontrivial topological phases in solid state physics. However, realizing nontrivial topological phases in other systems is of great importance from the fundamental point of view as it would allow studying peculiarities of these exotic states of matter under directly engineered experimental conditions. While the ongoing research of the topological insulators is entirely focused on electronic systems, there has been a recent emergence of interest in exploring topological orders with photons. A new class of photonic states of matter, such as photonic topological insulator, is emerging, and they will be used for emulating condensed matter systems in a simple and controllable way.

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