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Symmetries in Photonic Topological Insulators

Guest Editor:

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Message from the Guest Editor

Dear Colleagues,

A topological insulator supports some of the most fascinating properties for signal transport. It insulates in the bulk area but conducts along the edge and offers unprecedented robustness to defects and disorder, leading to advances in numerous research fields. As an extension of topological insulators from condensed matter physics, photonic topological insulators (PTIs) have been proposed and experimentally investigated from different approaches, analogous to the quantum Hall effect, quantum spin Hall effect, and quantum valley Hall effect. Generally, symmetry plays a crucial role in the study of PTIs, from their design to application. Various kinds of photonic devices with different functions can also be designed with the incorporation of symmetry, some of which might provide breakthroughs in their corresponding research fields.

In this Special Issue of *Symmetry*, we will focus on novel approaches, advanced technologies, and further applications in this field, as well as the consequences of the prevalent use of symmetry in theoretical and experimental studies on the design, fabrication, and application of PTIs...

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Message from the Editor-in-Chief

Symmetry is ultimately the most important concept in natural sciences. It is not surprising then that very basic and fundamental research achievements are related to symmetry. For instance, the Nobel Prize in Physics 1979 (Glashow, Salam, Weinberg) was received for a unified symmetry description of electromagnetic and weak interactions, while the Nobel Prize in Physics 2008 (Nambu, Kobayashi, Maskawa) was received for the discovery of the mechanism of spontaneous breaking of symmetry, including CP symmetry. Our journal is named *Symmetry* and it manifests its fundamental role in nature.

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