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Symmetry in Nonlinear Optics: Topics and Advances

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Deadline for manuscript submissions:
closed (31 December 2022)

Message from the Guest Editor

This Special Issue of *Symmetry* is devoted to recent developments in the theory of solitary waves and symmetries in nonlinear optics and its applications.

One of the most important developments in nonlinear optics is the discovery and use of the soliton effect. Solitons or solitary waves are a specific kind of wave. Solitons are stable localized wave packets. Solitons propagate long distance in dispersive media without changing their shapes. Solitons propagate at a constant velocity. In addition, solitons are unaltered in shape and speed by a collision with other solitons. In nonlinear optics, an optical soliton refers to an optical field that does not change during propagation in consequence of a delicate balance between group velocity dispersion and nonlinearity effects. Optical soliton pulses are very useful for transmitting high data rate information in long-distance optical fiber communications. Therefore, optical solitons have been a substantial exploratory field. Consequently, the dynamics of soliton propagation has been extensively addressed in various kinds of optical waveguides...

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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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