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Symmetries/Asymmetries in Mathematical Physics: Integrable Systems, Solitons and Nonlinear Waves

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Message from the Guest Editors

Dear Colleagues,

Complex nonlinear phenomena such as solitons, rogue waves, fractals and chaos, often exhibit symmetrical and asymmetrical characteristics, and are always associated with some solvable nonlinear mathematical and physical equations. Developing strategies to solve such equations and obtain exact solutions to explain nonlinear phenomena is very important.

Solvable equations, especially those with soliton solutions, are often related to the integrable properties of nonlinear evolution equations. In addition, many analytical methods for constructing exact solutions of nonlinear evolution equations have been developed. Some of these use symmetry theory and symmetry properties. The use of these methods to obtain the exact solutions and study the symmetric/asymmetric structures of solutions has research significance and scientific value.

The purpose of this Special Issue is to provide academic and industrial communities with a platform to discuss the symmetry/asymmetry issues related to solitons, nonlinear waves and integrable systems, and to share their research results. We will address the latest developments in nonlinear mathematical physics.

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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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