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Symmetry in the Soliton Theory

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Deadline for manuscript submissions:
closed (31 March 2026)

Message from the Guest Editors

Dear Colleagues,

Soliton is a nonlinear wave which was first discovered by the Scottish scientist Russell in 1834. Solitons appear in almost all branches of mathematical and physical science, such as nonlinear optics, hydrodynamics, chaotic oscillations, ecological and economic systems, plasma physics, chemistry and biochemistry, etc. Until now, it was proven that a large class of nonlinear fractional partial differential equations (NLFPDEs) have the soliton solutions through numerical calculations and theoretical analysis.

It is well known that there is a tight connection between symmetry and soliton solutions. Most of the existing techniques to manage the NLFPDEs and find the exact or approximate soliton solutions are, in essence, a case of symmetry reduction, including nonclassical symmetry and Lie symmetries, etc. Numerous methods have been developed in terms of obtaining the exact, approximate solutions of NLFPDEs, such as Darboux transformation, Bäcklund transformation method, Hirota bilinear method, Jacobi method, homotopy analysis method, variation iteration method, Adomian decomposition method, etc...

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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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