Special Issue

Exact Solutions with Symmetry Reduction and Long Time Behaviors of Non-linear Partial Differential Equations

Message from the Guest Editors

It is well-known that most nonlinear partial differential equations do not have a general solution in closed form. However, by using symmetry reductions we can construct their special exact solutions, which can reflect the properties or long time behaviors of the nonlinear partial differential systems. In other words, symmetry is especially useful in the analysis of some particular cases of complex systems. Similarly, it is often possible to write down some special exact solutions explicitly in terms of elementary functions, and those elementary functions often appear in a highly symmetric form. In this Special Issue, we are expecting theoretical or numerical analyses of some special solutions with symmetry assumptions of some nonlinear partial differential systems, such as those arising in fluid mechanics (original or special cases of the Navier–Stokes equations, Euler equations, Euler–Poisson equations, etc.), general relativity (original or special cases of the Einstein field equations, etc.), and other nontrivial and nonlinear partial differential equations.

Guest Editors

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About the Journal

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.

Editor-in-Chief

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