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Noether and Space-Time Symmetries in Physics

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closed (28 February 2023)

Message from the Guest Editors

Dear Colleagues,

Symmetry is the most common and important principle which guides to construct realistic theories in science. The notion of symmetry is fundamental not only in cosmological theories but also in quantum theory, thermodynamics, statistical physics, etc.

Most of the equations for dynamical systems in physics, such as the field equations of any gravity theory, are a system of non-linear ordinary/partial differential equations and are generally difficult to solve. In order to solve these complicated systems of ordinary/partial differential equations, Noether and space–time symmetries are some of the tools which can be used to find their exact solutions. Symmetries of Lagrangians are of great interest on account of Noether's theorem, which has been widely used in cosmology and gravity theories. Space–time symmetries such as isometries and collineations can reduce the number of unknown functions in space–time metric components. The main aim of this Special Edition is to invite researchers working in theoretical and mathematical physics to submit their work...

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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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