Special Issue

Noether Symmetries in Gravitation and Cosmology

Message from the Guest Editors

Theoretical shortcomings and tensions between cosmological observations have recently called into question the validity of General Relativity at extreme energy scales or strong regimes. This has motivated consideration of possible extensions to Einstein's gravity in order to resolve outstanding issues. Among the plethora of possible extensions of GR, models containing symmetries can be selected by means of Noether's theorem. Symmetries help to reduce the order of field equations and find analytic solutions for a given dynamical system. The aim of this Special Issue is to provide evidence of the importance of symmetries in the fields of gravitation and cosmology. Its focus is on the search for symmetries in the context of theories of gravity, pointing out their central role in solving dynamics, selecting physically viable models and achieving exact solutions.

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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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