

Special Issue

Symmetry in Relativity, Gravitation, and Cosmology

Message from the Guest Editors

Symmetry plays a very important role in relativity, gravitation, and cosmology. Einstein's field equations are a set of ten partial differential equations and are difficult to solve. Invariably, one has to invoke some symmetry to solve the equations. Most interesting solutions in relativity have some symmetry or the other, e.g., the Schwarzschild solution for a spherically symmetric body, the Kerr solution for an axisymmetric rotating body or the Friedmann–Lemaître–Robertson–Walker solution for a homogeneous and isotropic universe in cosmology. While it is possible to find exact solutions with little or even no symmetry, such solutions are often of limited physical interest. This Special Issue will focus on all aspects relating to symmetry in these topics, ranging from symmetries and exact solutions, invariant properties of exact and numerical solutions, variational symmetries, conservation laws, and Noether symmetries to Lorentz and other symmetry groups. Starting from the symmetries of special relativity, there is a deep connection between symmetry and conservation laws, and the identification of the correct symmetry is absolutely essential.

Guest Editors

Prof. Dr. Aroonkumar Beesham

Prof. Dr. Salvatore Capozziello

Prof. Dr. Farook Rahaman

Prof. Dr. Irina Radinschi

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Symmetry
Editorial Office
MDPI, Grosspeteranlage 5
4052 Basel, Switzerland
Tel: +41 61 683 77 34
symmetry@mdpi.com

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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

Prof. Dr. Sergei Odintsov
ICREA, 08010 Barcelona and Institute of Space Sciences (IEEC-CSIC),
C. Can Magrans s/n, 08193 Barcelona, Spain

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