Special Issue

Symmetry Methods and Applications for Geometry and General Relativity

Message from the Guest Editors

Understanding symmetry is essential for gaining insights into the fundamental characteristics of spacetime and the dynamics of gravitational fields. This exploration equips researchers in mathematical physics and cosmology with valuable tools and methodologies. This Special issue will especially focus on examining the deep connections between geometric structures and their underlying symmetries, and will investigate the application of these symmetries to address complex challenges within the realms of geometry and theoretical physics, particularly in relation to general relativity. This Special Issue aims to discuss the fundamental principles of symmetry, illustrating its role in simplifying and solving equations describing gravitational phenomena, including advanced topics such as the implications of symmetry in the context of black holes, gravitational waves, and cosmology, which are fundamental areas in contemporary research. We invite contributions that explore other facets of this theme, such as the use of differential geometry and group theory to comprehend the underlying symmetries in different mathematical physics problems.

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.

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