



symmetry

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Quantum Gravity

Guest Editor:

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Message from the Guest Editor

Dear colleagues,

Quantum gravity is the ultimate goal for modern research and has been widely regarded as the Holy Grail of physics. A key factor for the success of many theories in modern physics is the principle of symmetry. This is clearly demonstrated in the crucial roles of gauge invariance in the standard model of particle physics and the frame independence of general relativity. Indeed, many recent advances in quantum gravity relate fundamentally to symmetries (or their breaking) including Lorentz invariance, the equivalence principle, background independence, gauge symmetry, supersymmetry, and scale invariance.

In this Special Issue we aim to highlight recent research in quantum gravity, that may feature such symmetries. The scope covers nonexclusively some of the latest topics on loop quantum gravity and cosmology, quantum black holes, gravitational decoherence, supergravity, gravitational S-duality, experimental and observational quantum gravity, and analogue gravity.



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Special Issue



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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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