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Symmetries in General Relativity and Quantum Gravity

Guest Editors:

Prof. Dr. Aleksandar Mikovic
Departamento de Engenharia Informática e Sistemas de Informação, Universidade Lusófona de Humanidades e Tecnologias, Av. do Campo Grande 376, 1749-024 Lisbon, Portugal

Prof. Dr. Maja Burić
Faculty of Physics, University of Belgrade, Studentski Trg 12, SR-11001 Belgrade, Serbia

Deadline for manuscript submissions:
31 May 2024

Message from the Guest Editors

Symmetries are important tools for the study of GR and QG, since symmetry-reduced models play an important role...

One way to achieve this is by changing the spacetime manifold structure, and some of the current approaches are:

1. Changing the smooth manifold to a piecewise linear manifold and conserving the local Lorentz invariance. This yields the spin foam and Regge state-sum/state-integral models of QG;
2. Replacing the local Lorentz group with some categorical group or a quantum group;
3. Using a noncommutative manifold.

In this Special Issue, we welcome the submission of papers on the following topics:

- Classical and quantum mini-superspace models;
- Classical and quantum midi-superspace models;
- 2D models of black holes;
- Higher gauge theory formulations of GR;
- State-sum models of QG;
- Noncommutative geometry formulations of GR.

Papers on related topics will be also considered—for example, deformed GR theories.

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Editor-in-Chief

Prof. Dr. Sergei D. Odintsov
1. Institució Catalana de Recerca i Estudis Avançats (ICREA), Passeig Luis Companys, 23, 08010 Barcelona, Spain
2. Institute of Space Sciences (ICE-CSIC), C. Can Magrans s/n, 08193 Barcelona, Spain

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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Symmetry Editorial Office
MDPI, St. Alban-Anlage 66
4052 Basel, Switzerland

Tel: +41 61 683 77 34
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𝕏@Symmetry_MDPI