Special Issue

Gravitational Waves and Symmetry

Message from the Guest Editor

Gravitational waves have transformed our view of the universe, revealing dynamic processes from black hole mergers to neutron star collisions. Symmetry principles lie at the heart of both theoretical predictions and experimental breakthroughs in this field. In this Special Issue of *Symmetry*, we invite you to share original research, comprehensive reviews, and experimental reports that leverage symmetry to deepen our understanding of gravitational wave sources, propagation, and detection. We welcome submissions on theoretical, computational, and experimental fronts, including, but not limited to, the following:

- Symmetry groups in exact and perturbative solutions of Einstein's equations;
- Design and characterization of interferometric detectors exploiting symmetry;
- Calibration and noise mitigation methods based on symmetry properties of test masses and optics;
- Role of conformal, CPT, and duality symmetries in gravitational wave emission;
- Symmetry breaking during early-universe phase transitions and their gravitational wave imprints;
- Numerical relativity techniques that preserve or reveal underlying symmetries.

Guest Editor

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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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