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Symmetry and Quantum Gravity

Guest Editor:

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closed (31 May 2020)

Message from the Guest Editor

Dear Colleagues,

In quantum field models of electro-weak and strong interactions, "internal" symmetries have played a fundamental role, even before the epoch of gauge theories: Just think of the isospin symmetry, current algebra, Cabibbo angle, etc. For effective theories of quantum gravity (QG), one expects spacetime symmetries to play an equally important role, not only in the weak-field expansion on a fixed background, but also when strong fluctuations of the spacetime geometry are admitted (with the ensuing conceptual/interpretation problems). The most natural approaches for describing these situations are based on functional integrals and renormalization group techniques, either in the metric formalism or with Regge calculus or dynamical triangulations. We thus invite to consider such approaches, summarize their status and propose advances, also at the computational/simulation level, with special attention for the role of symmetries and their phenomenological consequences...

Dr. Giovanni Modanese
Guest Editor

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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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