Special Issue

Symmetry in Gauge Theories

Message from the Guest Editor

Gauge theories stand as the cornerstone of modern physics, describing three of the four fundamental interactions through the Standard Model. By introducing local symmetries, realized by Lie algebras, these frameworks incorporate gauge bosons and spontaneous symmetry breaking and elegantly explain particle masses. Beyond the canonical formulation, various approaches explore non-minimal couplings, topological terms, and possible connections with string theory or AdS/CFT. Such investigations offer valuable insights into non-perturbative phenomena, including confinement and dynamical symmetry breaking. The study of Lie algebras remains crucial for constructing gauge-invariant theories, shedding light on both the Standard Model's structure and potential physics beyond it. We invite researchers to contribute their original, high-quality research papers, inspiring further advances in our understanding of gauge 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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