Special Issue

Exploring the Advances in Symmetry and Quantum Field Theory: From Subatomic Interactions to the Early Universe

Message from the Guest Editors

Quantum field theory (QFT) defines the notion of fields and their manifestations, effectively providing a detailed picture of subatomic interactions and their role in the evolution of nature at the most fundamental level. Within QFT, it is understood that particles may exhibit wave-like instabilities. This theory has led to significant developments in high-energy physics. However, the absence of a recognized quantum gravity theory, largely due to the complex hierarchy problem, remains an issue that requires further exploration. Despite these challenges, an effective QFT has been developed, making its application more justified. The semi-classical framework, in which spacetime is viewed as a classical container, remains intact. While substantial strides have been made in QFT research, particularly concerning spacetimes with Minkowski geometry and varying dimensions, several pivotal issues demand further scrutiny.....

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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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