

Special Issue

Symmetry in Theoretical Particle Physics and Hadron Physics

Message from the Guest Editors

Symmetry principles, particularly Z_3 center symmetry and chiral symmetry, play a crucial role in understanding the behavior of strongly interacting matter under extreme conditions. These symmetries are central to the study of phase transitions in hot and dense QCD matter, impacting phenomena such as the early universe, neutron stars, and heavy-ion collisions. The restoration of chiral symmetry at high temperatures and densities is directly linked to the properties of hadrons and the equation of state, while Z_3 symmetry, associated with the confinement–deconfinement transition, is key to understanding quark–gluon plasma formation and its astrophysical implications. This Special Issue aims to explore the impact of these symmetries on the QCD phase diagram, the deconfinement and chiral phase transitions, and their relevance to neutron star mergers, compact star cooling, and the early universe’s thermal history... Please check more details here:

https://www.mdpi.com/journal/symmetry/special_issues/727EPKK51U

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Deadline for manuscript submissions

15 February 2026



Symmetry

an Open Access Journal
by MDPI

Impact Factor 2.2
CiteScore 5.3



mdpi.com/si/233449

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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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