Special Issue

Symmetry and Asymmetry in Plasma and High Energy Physics

Message from the Guest Editors

Symmetry and asymmetry are central in plasma and high-energy physics. Symmetry guides fundamental interactions, conservation laws, and mathematical structures, while asymmetries—spontaneous, dynamic, or explicit—often reveal deeper physical laws. In plasma physics, symmetries affect transport, stability, turbulence, and collective behaviors, from astrophysical plasmas to fusion devices. In high-energy physics, the Standard Model relies on symmetries, while CP violation, chiral asymmetry, and dynamical symmetry breaking point to physics beyond it. This Special Issue gathers research on symmetry and asymmetry across plasma and high-energy physics, including theoretical frameworks and experimental studies, from plasma instabilities and nonlinear dynamics to particle interactions and symmetry violations. Contributions showing how asymmetries emerge, evolve, and lead to observable effects, and how they guide the search for new physics, are encouraged.

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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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