Special Issue

Recent Advance in Elementary Particle Physics

Message from the Guest Editor

The scope of this SI includes topics from the field of high-energy astrophysics, including multimessenger astronomy aimed at the investigation of astrophysical phenomena using various instruments operating at different bands in the electromagnetic spectrum as well as detecting cosmic particles, namely cosmic rays, gamma rays, neutrino, and gravitational waves. Modern astrophysical detectors provide a rich set of data which can shed light on the particle production, acceleration, and propagation processes in cosmic accelerators at energies and scales exceeding beyond the ones achievable on the colliders. These observations connect cosmology and astrophysics with high-energy particle physics, providing an opportunity for fundamental probes of matter and space. Moreover, direct studies of the secondary cascades produced by cosmic particles in atmosphere and detector media allow one to test hadronic models in ultra-high-energy and forward-production regimes. Thus, the recent progress in astroparticle physics instrumentation, experimental methods, online data processing, and theoretical predictions for future observations and experiments can be covered in this SI.

Guest Editor

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Deadline for manuscript submissions

closed (15 January 2022)

Symmetry

an Open Access Journal by MDPI

Impact Factor 2.2
CiteScore 5.3

mdpi.com/si/74403

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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.

Editor-in-Chief

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