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## Symmetry/Asymmetry in Baryon Decay: Polarization, Hyperon Asymmetry Parameters and CP Violation

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### Message from the Guest Editor

The standard model (SM) of particle physics has been successfully proven in its ability to describe the fundamental particles and their interactions. However, there are still questions that the SM cannot answer. One of the key puzzles is why there is more matter than antimatter in the Universe. The violation of the charge-conjugation and parity (CP) symmetry could answer this big question. Although the existence of CP violation in kaon, beauty, and charm meson decays is firmly established, the evidence is not conclusive. Small violations of CP have not explained the large matter-antimatter asymmetry in the Universe beyond the SM expectation. The baryon decays provide a new laboratory to study the matter-antimatter asymmetry, and to probe the origin of our Universe by simultaneously analyzing the polarization and asymmetry parameters between the baryon and anti-baryon in electron-positron collider and B meson decay experiments. Articles have been conceived to provide a new and updated answer to this request by collecting, organizing, and framing all the available data, both experimental and theoretical results on symmetry and asymmetry test, CP violation study.....



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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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