Special Issue

Advances of Asymmetry/Symmetry in High Energy Physics

Message from the Guest Editors

Symmetries in Physics are one of the main aspects of the construction of field theories. The very definition of an elementary particle is related to the concept of symmetry, supersymmetric theories are built based on the Poincaré group, and the form of particle interactions is determined by symmetries. As important as symmetries are the violations of them. The asymmetry between matter and antimatter in the universe is still an unsolved mystery. Also, although theories possess symmetries at classical levels and are built according to them, quantum corrections can break them. The quantum breaking of a classical symmetry is called an anomaly, and it is related to observable processes. From a physical point of view, it is mandatory to find out if the anomaly is indeed real or spurious. Furthermore, it is interesting from an experimental point of view to check how good the symmetries that we take for granted are. For instance, the Standard Model Extension is a symmetry breaking framework that makes it possible to test how good Lorentz and CPT symmetries are by means of several precise experiments.

Guest Editors

Dr. Alexandre Rodrigues Vieira

Dr. Albert Petrov

Dr. Paulo José Ferreira Porfírio da Silva

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Symmetry
Editorial Office
MDPI, Grosspeteranlage 5
4052 Basel, Switzerland
Tel: +41 61 683 77 34
symmetry@mdpi.com

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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.

Editor-in-Chief

Prof. Dr. Sergei Odintsov
1. ICREA, 08010 Barcelona, Spain
2. Institute of Space Sciences (IEEC-CSIC), C. Can Magrans s/n, 08193 Barcelona, Spain

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