Special Issue

Asymmetric and Symmetric Dark Matter

Message from the Guest Editors

Dark matter has affected the properties and the expansion rate of the Universe throughout its history, yet this mysterious component is still unexplained. Its discovery would significantly advance our understanding of the law of physics and the fate of the cosmos. As conventional dark matter candidates fail to be observed in laboratories, we urge researchers to apply new ideas to address this open question. As such, one can gain inspiration from the asymmetry between the number densities of particles and antiparticles, which is manifest in the present Universe. It is reasonable to ask whether the asymmetry that is present in the visible sector also lurks in the invisible component of the Universe, which might comprise dark matter and other undiscovered particles. A possible hint at this relation is the fact that the baryonic and dark components have a comparable share in the matter budgets, with the mass of dark matter amounting to about five times that of visible matter...

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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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