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Symmetry of QCD Matter at Finite Temperature

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Message from the Guest Editors

Dear Colleagues,

It has been a long time since people have tried to understand the symmetry of quantum Chromodynamics (QCDs). Especially, in association with the confinement phenomenon of QCD matter, the symmetry of the physical states becomes very different from the fundamental symmetry in a QCD Lagrangian. The symmetry of QCD matter depends on the energy scale of the system, and also differs with the contents of bound states. The symmetry of QCD matter then entails the rich phase structure of QCD under some environmental conditions such as temperature and chemical potential. The phase transition of QCD can be mainly characterized using the chiral symmetry, which has been widely focused on both theoretically and experimentally. The existence and the possible location of the critical end point (CEP) for the chiral phase transition is the main goal of the heavy ion collision experiments.

Moreover, further studies and results from experiments are revealing that the symmetry...

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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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