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Viscous Cosmology

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Message from the Guest Editors

The Standard Cosmological Model is a strong idealization of the real Universe. It is assumed that spatial Universe is homogeneous and isotropic (with the Friedmann-Robertson-Walker symmetry) in which effects of dissipation are neglected at very beginning. One of the ways to question this idealization is to include effects of dissipation in the form of bulk viscosity.<false,>Eckart (1940) introduced viscous contributions to the stress-energy tensor in his formulation of a relativistic theory of dissipative processes. At first this approach was used to avoid the initial singularity in the FRW cosmology. Nowadays, simple models of bulk viscosity, i.a., allow to study the effect of isotropic expansion on the thermodynamic properties of fluids and offer a phenomenological description of particle creation in the presence of strong gravitational fields.

The purpose of the present Special Issue, entitled “Viscous Cosmology”, is the presentation of new ideas, methods of description of viscosity and its role in a cosmic evolution for better understanding of nature of dissipation in general relativity and cosmology.

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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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