Advances in High Energy Physics

Special Issue on

Dark Matter and Dark Energy in General Relativity and Modified Theories of Gravity

CALL FOR PAPERS

Both the dark matter and dark energy issues are considered essential for a deeper understanding of the evolutionary universe. According to studies, dark matter and dark energy have had a strong influence on the structure and evolution of the universe. theory about the way dark energy affects the expansion of the universe exists already, but it remains unknown what exactly dark energy is, except that it comprises almost sixty-eight percent of the universe. In addition, dark matter makes up almost twenty-seven percent of the universe, with the remaining five percent being baryonic matter. It is not known exactly what dark matter is, and in order to explain the missing mass of the universe it is commonly accepted that the study of dark energy and dark matter lies at the forefront of modern research and is considered of paramount importance for the development of 21st century physics.

The focus of this special issue is on questions regarding dark matter and dark energy and their relation to General Relativity and modified theories of gravity. We hope to receive submissions with a focus on the influence dark matter and dark energy have on the structure of the galaxy and/or the types and morphology of galaxies in gravitational lensing, black holes, wormholes, and compact stars and in more exotic objects such as gravastars and boson stars. In addition, we hope that the addressing of questions on basic open issues in these areas regarding, for example, the composition of dark matter or the way it is produced, and the true identity of dark energy, may provide some new answers, thereby expanding the acquired corpus of knowledge about dark matter and dark energy and yielding a better insight into their physics.

This special issue welcomes original research articles as well as review articles on theoretical advances.

Potential topics include but are not limited to the following:

- Relation of General Relativity to dark matter and dark energy
- Modified gravity models of dark energy and dark matter
- Boson stars in General Relativity and in modified theories of gravity
- Relation of gravitational waves to boson stars
- Boson stars as alternative to black holes
- Scalar field models of dark matter
- Structure of galaxies, galactic rotation curves, dark matter, and dark energy under General Relativity as well as in modified theories of gravity
- Dark radiation and dark galaxies as admitted by General Relativity
- Dark radiation models in General Relativity
- Dark radiation in modified theories of gravity
- Relation of black holes to dark matter
- Compact stars as a support of dark matter presence
- Wormholes supported by dark matter and in modified theories of gravity
- Gravastar models of dark energy
- Relation of gravastars to dark matter
- Gravastars as an alternative to black holes

Authors can submit their manuscripts through the Manuscript Tracking System at https://mts.hindawi.com/submit/journals/ahep/dmdg/.

Papers are published upon acceptance, regardless of the Special Issue publication date.

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