



Cosmology and the Quantum Vacuum

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Message from the Guest Editors

This Special Issue will collect contributions from leading scientists working on problems at the interface between modern cosmological theories and the quantum nature of the vacuum; in particular, topics related to modified theories of gravity, dark energy and inflation. In addition, a description of the universe's evolution in these theories, and the compulsory modification of these within the theoretical framework of quantum gravity, with loop quantum cosmology being an elegant theory that may provide a singularity free cosmic evolution. Description and understanding of the quantum vacuum is also a challenge to all these theories, in particular its manifestation as a Casimir effect.

A non-exhaustive list of topics:

- Cosmological models: modified gravities, $f(R)$ theories and the like, non-local models
- Possibility of observing modified gravity traces at the astrophysical level
- Quantum Gravity
- Quantum Cosmology and Loop Quantum Cosmology
- Quantum vacuum and the Casimir Effect
- The cosmological constant problem
- Mathematical physics techniques in quantum vacuum studies





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Message from the Editorial Board

Galaxies provides an advanced forum for studies related to astronomy, astrophysics, and cosmology, including all of their subfields. Different formats, such as specialized research articles, reviews, communications and technical notes are welcomed. Manuscripts containing original and creative research proposals and ideas are especially appreciated.

We encourage scientists to publish their astronomical observations and theoretical results in as much detail as possible. There is no restriction on the paper length and full experimental and methodological details, as applicable, should be provided. All papers will be peer reviewed promptly. On behalf of the distinguished members of the editorial board, I extend my welcome to all researchers working on these subjects to contribute to *Galaxies*.

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