Special Issue

Higher-Derivative Theories of Gravity

Message from the Guest Editors

A vast amount of observational data have made Einstein's General Relativity (GR) the best current theory that describes classical aspects of the gravitational interaction. However, despite its great success, there are still fundamental questions that remain unanswered. On short-distance scales, GR predicts the existence of black-hole and cosmological big-bang singularities where spacetime terminates and the theory breaks down. Moreover, Einstein's theory lacks predictability in the high-energy regime, being perturbatively non-renormalizable. The aim of this Special Issue is to present a collection of original research and review articles on different approaches to quantum gravity by placing particular emphasis on the role and true meaning of higher, or even infinite, derivatives in the quantization of the gravitational interaction. Both formal aspects and applications of higher-derivative theories will be covered.

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Message from the Editor-in-Chief

The multidisciplinary journal *Universe* is aiming to follow and, hopefully, to lead to the largest extent as possible the ever-self renovating threads which weave mathematical theories with our understanding of the magnificent natural world. On behalf of all the distinguished members of the Advisory and Editorial Boards, I extend my welcome to this journal and look forward to hearing from the interested contributors and learning about their valuable research.

Editor-in-Chief

Prof. Dr. Lorenzo Iorio
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