



Recent Progress of Black Holes Physics

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Message from the Guest Editor

The multi-messenger paradigm has just ushered in a new era in the study of the universe. With the advent of gravitational wave astronomy, the discovery of cosmic particles has enabled us to learn more about the various cosmic origins and the characteristics of the intergalactic medium. Our physical ideas can be tested in energy regimes that are not immediately accessible in accelerators, especially the most energetic events. Quantum gravitational phenomenology, a relatively young branch of physics, aims to build phenomenological models that can incorporate some Planck-scale effects, offering a bottom-up solution to the extensively researched quantum gravity problem. Black holes are currently the most significant objects in the universe, as demonstrated by astrophysical observations. For a better understanding of black hole physics as well as cosmology, comprehensive observational and theoretical investigations are urgently needed.

- black holes
- wormholes
- black hole thermodynamics
- primordial black holes
- cosmological black holes
- black hole interiors
- dark energy around black holes
- dark matter around black holes
- black holes in modified gravity
- astroparticle physics





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Message from the Editor-in-Chief

The multidisciplinary *Universe* journal 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 editorial board, I extend my welcome to this new journal and look forward to hearing from the interested contributors and learning about their valuable research.

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