Special Issue

Black Hole Physics and Beyond: From the Ringdown Analysis with Gravitational Waves

Message from the Guest Editors

Detections of gravitational waves have provided us with a new tool for black hole (BH) physics. By observing BHs directly, we can verify the theory describing them. In particular, the ringdown signals from binary BH mergers provide interesting information to us. However, difficulties still remain in the data analysis of the signals, since they damp exponentially, and it is still unknown when and where the BH quasinormal modes (QNMs) are excited during the merger. Furthermore, modelling signals apart from BHs or general relativity is necessary for testing exotic compact objects and gravity theories. Therefore, we need more progress in observation and theory to understand the physics. With the aim of exploring the BH physics from the ringdown signals more thoroughly, the Special Issue focuses on broad subjects related to ringdown analysis both from theoretical and observational studies such as,

- Calculation methods for QNMs
- The origin of excitation of QNMs
- QNMs for BHs in modified gravity, regular BHs, higher dimensional BHs, and exotic compact objects
- Techniques for the gravitational wave ringdown analysis
- Testing gravity theories from the gravitational wave observations

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About the Journal

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

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