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# Gamma-Ray Bursts: Observational and Theoretical Prospects in the Era of Multi-Messenger Astronomy

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Deadline for manuscript submissions:
**closed (11 March 2022)**

## Message from the Guest Editors

Our understanding of gamma-ray bursts (GRBs) has advanced significantly since their discovery almost 50 years ago, and several major milestones have been reached. Some of the breakthrough discoveries include:

- the discovery of the GRB afterglow—a long-lasting emission in the X-ray, optical, infrared, and radio wavelengths that is due to the propagation of a relativistic shock through the surrounding medium;
- confirmation of the extragalactic origin of GRBs at distances reaching a cosmological redshift up to $z > 9$, placing GRBs among the most distant astronomical objects known today and making them probes of the distant Universe;
- the association of some of long GRBs with core-collapse supernovae Ic-linked with the collapse of fast-spinning massive stars into neutron stars or black holes;
- the connection of short GRBs with mergers of compact objects such as neutron stars. The recent observation of the gravitational wave signal GW170817, detected by LIGO, followed by the short gamma-ray burst GRB170817A with an optical transient (kilonova), marked the beginning of multi-messenger astrophysics in which gravitational waves and electromagnetic observations are combined.

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## Editor-in-Chief

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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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