

Special Issue

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

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.

Guest Editors

Dr. Mariusz Tarnopolski

Astronomical Observatory of the Jagiellonian University, Krakow, Poland

Dr. Jakub Ripa

Department of Atomic Physics, Institute of Physics, Eötvös Loránd University, H-1053 Budapest, Hungary

Deadline for manuscript submissions

closed (11 March 2022)



Universe

an Open Access Journal
by MDPI

Impact Factor 2.5
CiteScore 4.3



mdpi.com/si/78166

Universe
MDPI, Grosspeteranlage 5
4052 Basel, Switzerland
Tel: +41 61 683 77 34
universe@mdpi.com

[mdpi.com/journal/
universe](https://mdpi.com/journal/universe)





Universe

an Open Access Journal
by MDPI

Impact Factor 2.5
CiteScore 4.3



[mdpi.com/journal/
universe](https://mdpi.com/journal/universe)



About the Journal

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 journal and look forward to hearing from the interested contributors and learning about their valuable research.

Editor-in-Chief

Prof. Dr. Lorenzo Iorio

Ministero dell'Istruzione e del Merito, Viale Unità di Italia 68, 70125 Bari, BA, Italy

Author Benefits

Open Access:

free for readers, with article processing charges (APC) paid by authors or their institutions.

High Visibility:

indexed within Scopus, SCIE (Web of Science), Astrophysics Data System, INSPIRE, CAPIus / SciFinder, Inspec, and other databases.

Journal Rank:

JCR - Q2 (Astronomy and Astrophysics) / CiteScore - Q2 (General Physics and Astronomy)