Special Issue

Microphysics Meets Astrophysics: Understanding Dense Matter Through Compact Objects

Message from the Guest Editors

Neutron stars are amongst the most extreme objects in the Universe. Hence, these objects can be regarded as natural laboratories in which matter is subject to the most extreme conditions. The matter at the innermost part of their cores can reach values that are over tens of the nuclear saturation density, potentially leading to the occurrence of a hadron–quark phase transition; their magnetic fields can reach above 1015 G at their surfaces. Moreover, some neutron stars rotate more than 1000 times per second. These objects are thus complex and intriguing, and enable us to understand the very nature of particles and the equation of state of dense matter, which remains unknown. Microphysics Meets Astrophysics: Understanding Dense Matter Through Compact Objects aims to provide an overview of research regarding the theoretical modeling and study of neutron and hybrid stars microphysics and astrophysics. In the current era of multi-messenger astronomy using gravitational waves, which began with event GW170817, and the application of data science to basic research, this Special Issue aims to present novel studies that explore these subjects.

Guest Editors

Dr. Ignacio Francisco Ranea-Sandoval

1. Grupo de Astrofísica de Remanentes Compactos, Facultad de Ciencias Astronómicas y Geofísicas, Universidad Nacional de La Plata, La Plata, Argentina
2. Consejo Nacional de Investigaciones Científicas y Técnicas (CONICET), La Plata, Argentina

Dr. Mauro Mariani

1. Grupo de Astrofísica de Remanentes Compactos, Facultad de Ciencias Astronómicas y Geofísicas, Universidad Nacional de La Plata, La Plata, Argentina
2. Consejo Nacional de Investigaciones Científicas y Técnicas (CONICET), La Plata, Argentina

Deadline for manuscript submissions

31 October 2026

Symmetry

an Open Access Journal by MDPI

Impact Factor 2.2
CiteScore 5.3

mdpi.com/si/232813

Symmetry
Editorial Office
MDPI, Grosspeteranlage 5
4052 Basel, Switzerland
Tel: +41 61 683 77 34
symmetry@mdpi.com

mdpi.com/journal/symmetry

Symmetry

an Open Access Journal by MDPI

Impact Factor 2.2
CiteScore 5.3

mdpi.com/journal/symmetry

About the Journal

Message from the Editor-in-Chief

Symmetry is ultimately the most important concept in natural sciences. It is not surprising then that very basic and fundamental research achievements are related to symmetry. For instance, the Nobel Prize in Physics 1979 (Glashow, Salam, Weinberg) was received for a unified symmetry description of electromagnetic and weak interactions, while the Nobel Prize in Physics 2008 (Nambu, Kobayashi, Maskawa) was received for the discovery of the mechanism of spontaneous breaking of symmetry, including CP symmetry. Our journal is named *Symmetry* and it manifests its fundamental role in nature.

Editor-in-Chief

Prof. Dr. Sergei Odintsov
ICREA, 08010 Barcelona and Institute of Space Sciences (IEEC-CSIC), C. Can Magrans s/n, 08193 Barcelona, Spain

Author Benefits

Open Access:

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

High Visibility:

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

Journal Rank:

JCR - Q2 (Multidisciplinary Sciences) / CiteScore - Q1 (General Mathematics)

MDPI