Special Issue

Gamma-Ray Astrophysics with High Sensitivity

Message from the Guest Editor

The ever-improved sensitivity and angular resolution of various gamma-ray astronomical detectors have greatly advanced the field of gamma-ray astrophysics. Recently, this has culminated in the publication of source catalogs, especially in the GeV and TeV energy bands. The Data Release 4 of the fourth Fermi-LAT catalog (4FGL-DR4) now contains more than 7000 sources detected at GeV energies; in the TeV energy band, more than 300 sources are included in the TeVCat, as of August, 2024. At the highest energies, the LHAASO instruments have opened the PeV observing window, and surprisingly or not, many leptonic and hadronic PeVatrons do exist in our galaxy. This recent development highlights the intimate relationship of gamma-ray astronomy and the origin of cosmic rays. The CTA array with its supreme sensitivity and angular resolution will certainly add much to our knowledge in this quest. On the other hand, the lack of sensitive instruments in the MeV energy band since COMPTEL has hindered the development of MeV astrophysics, which is important in studying the cosmic nucleons. Therefore, the discovery space in the MeV band remains huge.

Guest Editor

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Deadline for manuscript submissions

closed (30 June 2025)

Galaxies

an Open Access Journal by MDPI

Impact Factor 3.8
CiteScore 6.3

mdpi.com/si/216371

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About the Journal

Message from the Editorial Board

Galaxies provides an advanced forum for studies related to astronomy, astrophysics, and cosmology, including all of their subfields. Different formats, such as specialized research articles, reviews, communications and technical notes are welcomed. Manuscripts containing original and creative research proposals and ideas are especially appreciated.

We encourage scientists to publish their astronomical observations and theoretical results in as much detail as possible. There is no restriction on the paper length and full experimental and methodological details, as applicable, should be provided. All papers will be peer reviewed promptly. On behalf of the distinguished members of the editorial board, I extend my welcome to all researchers working on these subjects to contribute to *Galaxies*.

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