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Editorial

Gamma-Ray Burst in Swift and Fermi Era

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Gamma-ray bursts (GRBs) are short-lived and intense flashes of gamma-rays from space associated with the death/explosion of massive stars and/or compact binaries. Since the discovery of GRBs in 1967 by the Vela satellite, the mystery of their origin has attracted many space missions including *Compton*, *BeppoSAX*, *HETE-2*, *INTEGRAL*, *Swift*, and *Fermi*, resulting in many significant breakthroughs. With the *Swift* mission launched in 2004, followed by *Fermi* in 2008, the study of GRBs is now in a productive and unique period while both of these space satellites are operational. Our understanding of GRB physics has undeniably been revolutionized in the past decade, though it is still far from complete. In this special issue, we have collected reviews and research papers that are closely related to the two missions for studies of GRBs and their afterglows.

To begin with, the review article by A. Pe'er focuses on GRB prompt emission in the high-energy gamma-ray band, and another review article by H. Gao and P. Mészáros summarizes the early-time reverse-shock emission. Both reviews show new observations from *Swift* and *Fermi* in the past few years, and they also present theoretical progress. Two other review articles discuss GRBs beyond the gamma-ray band. The one by Y. Urata et al. summarizes GRB follow-up observations in the submillimeter band and shows the expected outcomes from a new planned Greenland Telescope that operates at submillimeter wavelengths. The other, by K. Asano and K. Murase, reviews theoretical models for non-electromagnetic emission from GRBs, mainly neutrinos and cosmic rays.

A set of three research articles in this special issue focus on specific topics of GRBs. One by Y. Kawakubo et al. studies the spectral lags and their implications from a sample of 40 *Swift* GRBs, while that of S. Dado and A. Dar discusses GRB 130603B and some possible theoretical models. The research article by J.-J. Wei et al. utilizes GRBs and Type Ia supernovae to constrain the Cardassian expansion model and dark energy.

Overall, this volume covers various topics about GRBs, summarizes previous results, presents progress during the *Swift* and *Fermi* mission periods, and describes fresh challenges from the new observations. We hope that GRB researchers find this work useful for their studies and that it helps lead to new results and progress toward solving the mysteries of GRBs.

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