

Exploring Peculiar Short GRBs: A Systematic Search within the Third Swift Catalog

Gamma-ray bursts (GRBs) are potential candidates for gravitational wave emitters, and peculiar GRBs could provide new opportunities for study in multimessenger astronomy. In this study, we analyze four peculiar GRBs—GRB070724A, GRB070429B, GRB090426, and GRB120804A—all detected by the Swift space telescope.

These GRBs were identified through a systematic search in the Third Swift GRB Catalog, recalibrating their Epeak and isotropic energy. Our investigation evaluates temporal estimators, such as emission time, spectral lag, and isotropic energy, among others, extracted from Swift GRB observations. Our findings reveal that the calculated temporal estimators offer diverse insights into the classification of the examined GRBs, indicating the distinctive nature of these events. This suggests that these GRBs are “peculiar” when compared to typical GRBs in the spectral plane, specifically in the Amati-like relations.

In the next phase of our research, we plan to expand our analysis, incorporating enhancements in data management and a comprehensive exploration of the spectrum of events, among other aspects.

Author: NORIEGA, Nicolas (Escuela Politécnica Nacional)

Co-authors: CÁRDENAS, Esteban (Escuela Politécnica Nacional); Ms CHACÓN, Jennifer; QUIROLA, Jonathan (Radboud university); VASQUEZ, nicolas

Presenter: NORIEGA, Nicolas (Escuela Politécnica Nacional)