

Calculation of Long Gamma-Ray Burst Pseudo-Redshifts using the Amati Correlation

Thursday 11 July 2024 11:30 (20 minutes)

Gamma-ray bursts (GRBs) are high-energy events that release isotropic energy on the order of 10^{48} - 10^{55} erg. They are classified into long or short bursts depending on their observed duration. Long GRBs have a duration (t_{90}) greater than 2 seconds, and their progenitors are associated with the collapse of massive stars (collapsars).

Distances are only known for a small number of GRBs. Empirical correlations have led to various methods for obtaining pseudo-redshift calculations. One of the most well-studied correlation is the $E_{peak} - E_{iso}$ correlation, also known as the Amati correlation, which relates the peak energy of the Band function of the $\nu F\nu$ spectrum in the GRB frame to the equivalent isotropic energy for long GRBs.

In this work, a sample of long GRBs from the Fermi telescope catalogue is analyzed, and the Amati correlation is used to infer pseudo-redshifts. This research was supported by the UNAM-PAPIIT project number IG101323.

Author: XOL, Gabriela

Co-authors: Dr SACAHUI REYES, Jose Rodrigo; GONZÁLEZ, María Magdalena (IA-UNAM); PÉREZ ARAUJO, Yuniór Frainen (IA-UNAM)

Presenter: XOL, Gabriela

Session Classification: Contributed talks