

# A time-resolved, systematic approach to gamma-ray burst physics

*Monday, 26 May 2025 17:45 (15 minutes)*

The Fermi mission is a space-based observatory designed to study the gamma-ray sky. It consists of two main instruments: the Large Area Telescope (LAT) and the Gamma-ray Burst Monitor (GBM), covering a broad energy range from  $\sim 10$  keV to  $>300$  GeV. Among its core scientific goals is the detection and characterization of Gamma-ray Bursts (GRBs), although the mechanisms driving their prompt emission and the precise location of the emission sites remain open questions.

A joint spectral analysis of GRBs simultaneously detected by both LAT and GBM enables the characterization of their prompt emission over several decades in energy, allowing for a detailed investigation of spectral evolution. In this work, we perform the first systematic, time-resolved spectral study of the complete sample of GRBs jointly observed by both Fermi instruments. We present preliminary results from the joint fits and quantitatively assess the impact of high-energy emission on the inferred spectral parameters by comparison with GBM-only analyses. Leveraging Fermi's broadband capabilities, this study provides new insights into GRB physics.

**Primary author:** HOLZMANN AIRASCA, Aldana (Istituto Nazionale di Fisica Nucleare)

**Co-authors:** BISSALDI, Elisabetta (Istituto Nazionale di Fisica Nucleare); LONGO, Francesco (Istituto Nazionale di Fisica Nucleare); Dr DI VENERE, Leonardo (INFN Bari)

**Presenter:** HOLZMANN AIRASCA, Aldana (Istituto Nazionale di Fisica Nucleare)

**Session Classification:** Rapid talks