



## Astrophysics &gt; High Energy Astrophysical Phenomena

# Spectral catalogue of bright gamma-ray bursts detected with the BeppoSAX/GRBM

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The emission process responsible for the so-called "prompt" emission of gamma-ray bursts is still unknown. A number of empirical models fitting the typical spectrum still lack a satisfactory interpretation. A few GRB spectral catalogues derived from past and present experiments are known in the literature and allow to tackle the issue of spectral properties of gamma-ray bursts on a statistical ground. We extracted and studied the time-integrated photon spectra of the 200 brightest GRBs observed with the Gamma-Ray Burst Monitor which flew aboard the BeppoSAX mission (1996-2002) to provide an independent statistical characterisation of GRB spectra. The spectra were fit with three models: a simple power-law, a cut-off power law or a Band function. The typical photon spectrum of a bright GRB consists of a low-energy index around 1.0 and a peak energy of the  $\nu F_{\nu}$  spectrum  $E_p \sim 240$  keV in agreement with previous results on a sample of bright CGRO/BATSE bursts. Spectra of  $\sim 35\%$  of GRBs can be fit with a power-law with a photon index around 2, indicative of peak energies either close to or outside the GRBM energy boundaries. We confirm the correlation between  $E_p$  and fluence, with a logarithmic dispersion of 0.13 around the power-law with index  $0.21 \pm 0.06$ . The low-energy and peak energy distributions are not yet explained in the current literature. The capability of measuring time-resolved spectra over a broadband energy range, ensuring precise measurements of parameters such as  $E_p$ , will be crucial for future experiments (abridged).

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