

Duration distributions for gamma-ray bursts registered in various experiments since WIND/KONUS- up to Fermi/GBM

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Gamma-ray bursts duration distributions properties for events registered by experiments SMM/GRS, CGRO/BATSE, HETE2, WIND/KONUS, KONUS-WIND/VENERA 13 or 14, GRANAT/PHEBUS, GRANAT/SIGMA, Swift/BAT, RHESSI, ULYSSES, GRANAT/WATCH, Fermi/GBM are considered. GRBs observed since 1967 and now several thousands of events were listed in more than 15 catalogues. Gamma-ray bursts duration distribution was the first analysed using data of BATSE instrument onboard the CGRO. Bursts duration was described by the time intervals in which the integrated counts from the burst increases from 25% to 75% (t_{50}) and from 5% to 95% (t_{90}). The GRBs duration distribution analysis had shown the existence of two bursts classes: long (t_{90} more than 2 s) and short (t_{90} less than 2 s). But results of similar distributions for bursts observed by other detectors have shown shifting of boundary between short and long events from value of 2 s. For example, Swift/BAT GRBs subset analysis give the value of ~ 1 s for this separator point. Moreover, t_{90} has dependence from instrument registered this burst – it is function of detector sensitivity threshold and operation energy band. For instance, the duration of GRB060418 burst t_{90} is ~ 52 s according to Swift/BAT data and only 36 s according to RHESSI data. Therefore, the type of GRB (whether it short or long) should be defined only taking into account distinctive features of instrument detected this event. Firstly third intermediate GRBs subgroup was found some years ago in BATSE GRB duration and duration-hardness distributions. Attributes of this subgroup appearance in events subsets for various detectors are discussed.

Presentation type

Section talk (10+5 min)

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