

Is the class of short gamma ray bursts homogenous?

A. Pozanenko¹, V. Loznikov¹, R. Preece²

¹Space Research Institute (IKI) (Moscow, Russia)

²University of Alabama (Huntsville, USA)

A morphological classification of short duration Gamma-Ray Bursts (GRBs) is now in crisis. Short duration GRBs consisting of a single short activity episode ($T_{90} \sim 0.5$) at mid cosmological distances ($z \sim 0.1 - 1$) are still observing. On the other hand, searching for Soft Gamma-Repeaters (SGRs) from nearby galaxies seems to be successful with the detection of GRB 070201 from M31 and GRB 051103 from M81. Indeed, the giant flare of SGR 1806–20 on December 27, 2004 would be observable as a short GRB and could be detected at a distance of 50 Mpc. Finally, bursts with an extended emission have been detected in both BATSE and Swift/BAT experiments. Initial episode of these events looks like a classical short duration burst, while intense emission registered up to 100 s puts the event into long duration mode (i.e., into the mode of classical long duration GRBs) if based only on the observable duration. The best known representative of such events is GRB 060614.

Based on BATSE, BAT/Swift and INTEGRAL bursts we investigate common features of short GRBs and bursts with the extended emission. We also discuss the nature of GRBs with extended emission and estimate a number of SGR events in the BATSE catalog.