

Swift Observations of GRB 061210

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1. INTRODUCTION

BAT triggered on a short hard burst, GRB 061210, at 12:20:39 UT (Trigger 243690) (Cannizzo, et al., GCN Circ. 5904, Palmer, et al., GCN Circ. 5095). *Swift* did not slew because of the Moon observing constraint – this burst is 4 deg from the Moon. The BAT on-board calculated location is RA, Dec(J2000)= (144.514, +15.632) deg which is (09h 38m 03s, +15d 37' 56"), with an uncertainty of 3 arcmin (radius, 90% containment, including systematic uncertainty). The BAT light curve shows a hard, single spike structure with a duration of ~ 0.2 sec and a soft extended emission for ~ 90 sec.

No XRT or UVOT observations will be possible until the burst emerges from the spacecraft Moon constraint at about the start of 12-12-2006.

2. BAT OBSERVATION AND ANALYSIS

Using the data set from $T - 239$ to $T + 478$ sec from the recent telemetry downlink, we report further analysis of BAT GRB 061210. The BAT ground-calculated position is RA, Dec = 144.521, 15.613 deg {09h 38m 05.1s, 15d 36' 46.3"} (J2000) ± 2.3 arcmin, (radius, sys+stat, 90% containment). The partial coding was 30%.

The mask-weighted lightcurve (Figs. 1 and 2) have a hard FRED-like spike lasting a total of ~ 192 msec followed by much weaker, softer emission lasting out to $\sim T + 90$ sec. T_{90} (15 – 350 keV) is 85 ± 5 sec (estimated error including systematics). The event-by-event data shows the FRED-like peak is resolved to 3 somewhat overlapping spikes within 60 msec.

The time-averaged spectrum from $T + 0.2$ to $T + 89.6$ is best fit by a simple power-law model. The power law index of the time-averaged spectrum is 1.55 ± 0.28 . The fluence in the 15 – 150 keV band is $1.1 \pm 0.2 \times 10^{-6}$ erg cm^{-2} . The 1-sec peak photon flux measured from $T - 0.01$ sec in the 15 – 150 keV band is 5.3 ± 0.5 ph cm^{-2} sec^{-1} .

The spectrum of the spike alone ($T + 0.212$ to $T + 0.760$ sec) is also fit by a simple power law model. The power law index of the initial spike is 0.79 ± 0.15 . The fluence in the 15 – 150 keV band is $3.0 \pm 0.3 \times 10^{-7}$ erg cm^{-2} .

All the quoted errors are at the 90% confidence level.

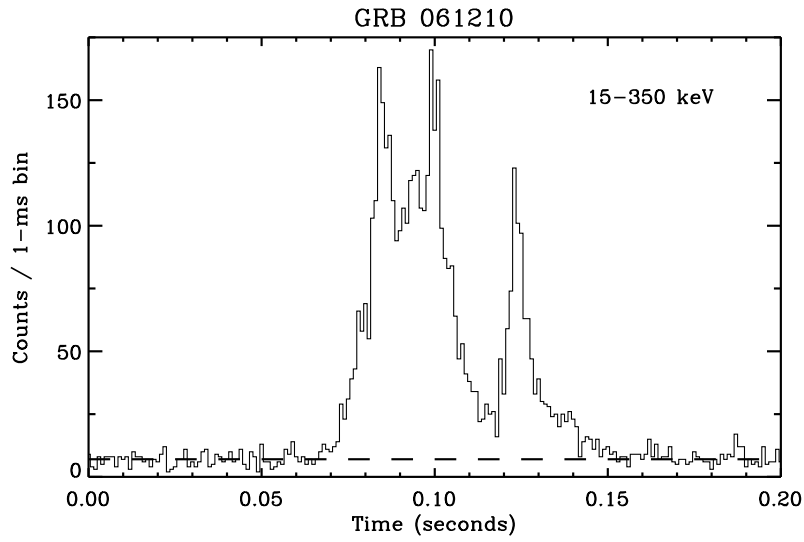


Figure 1: BAT lc for 061210, binned at 1 ms.

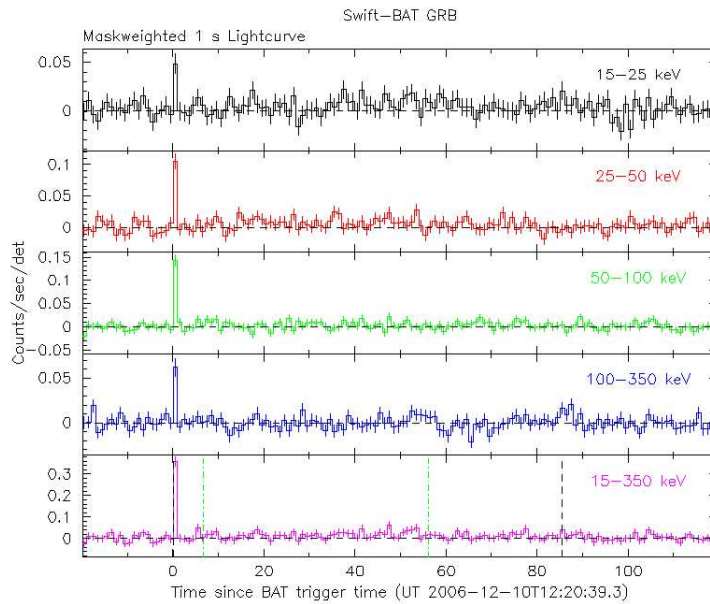


Figure 2: BAT Lightcurve. The light curve in the 4 individual plus total energy bands. Green dotted line: T_{50} , Black dotted line: T_{90} , Blue: Slew start, Orange: Slew end. An illuminated detector is 0.16 cm^2 .