Swift Observation of GRB 110207A

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1 Introduction

BAT triggered on GRB 110207A at 11:17:20 UT on the 7^{th} of February 2011 (Trigger 444912) (Littlejohns, *et al.*, *GCN Circ.* 11658). This was a long burst with a $T_{90}(15-350\ keV) = 80.3\ \pm 16.2$ s. The best position available for this burst is the BAT ground-calculated position, RA($J2000$) = $12^{\circ}.540$ ($00^h\ 50^m\ 09^s.5$), Dec($J2000$) = $-10^{\circ}.790$ ($-10^{\circ}\ 47'\ 23''.8$) $\pm 1'.3$ (90% confidence) (Palmer, *et al.GCN Circ.* 11664). Initially, Swift could not slew on to the target, due to a Moon constraint, which lasted until 13:20 UT on the 8^{th} of February. Further observations were restricted as the source position went in to a Sun constraint at 04:17 UT on the 11^{th} of February. 5.0 ks of XRT data were taken once the source was out of the Moon constraint, but no source was found within the BAT error circle to a 3-σ upper limit of 2.0×10^{-3} cts.s^{-1}.

This burst was also observed by the Fermi GBM, which obtained a $T_{90}(50-300\ keV) = 39$ s (von Kienlin, *GCN Circ.* 11671). Additionally, Suzaku WAM triggered on the burst, measuring a $T_{90}(50-5000\ keV) = 2.9$ s for a lightcurve with multiple peaks (Tsai, *et al.*, *GCN Circ.* 11695). Ground-based Observations were performed by MASTER (Yurkov, *et al.*, *GCN Circ.* 11660) and TAROT (Klotz, *et al.*, *GCN Circ.* 11667), but only upper limits were found in each case.

2 BAT Observation and Analysis

Using the data set from $T-240$ to $T+962$ s, further analysis of the BAT data for GRB 110207A has been performed by Swift team (Palmer, *et al.*, *GCN Circ.* 11664). The BAT ground-calculated position is RA($J2000$) = $12^{\circ}.540$ ($00^h\ 50^m\ 09^s.5$), Dec($J2000$) = $-10^{\circ}.790$ ($-10^{\circ}\ 47'\ 23''.8$) $\pm 1'.3$, (radius, systematic and statistical, 90% containment). The partial coding was 100%.

The masked-weighted light curves (Fig.1) from $T-20.1$ to $T+138.3$ s show seven short peaks, the first starting at approximately $T-0.1$ s and the last at $T+20$ s with a long decay extending out to approximately $T+100$ s. $T_{90}(15-350\ keV)$ for this burst is 80.3 ± 16.2 s (estimated error including systematics).

The time-averaged spectrum from $T-0.1$ to $T+108.3$ s is best fitted by a simple power law model. The power law index of the time-averaged spectrum is 1.30 ± 0.12. The fluence in the 15-150 keV band is 1.6 ± 0.1 $\times$ 10^{-6} erg.cm^{-2}. The one second peak photon flux measured from $T-0.11$ s in the 15-150 keV band is 1.1 ± 0.1 ph.cm^{-2}.s^{-1}. All the quoted errors are at the 90% confidence level.

3 XRT Observations and Analysis

The XRT took 5.0 ks of photon counting mode data between 14:39:12 UT and 21:11:07 UT on the 8^{th} of February, approximately one day after the trigger time. No source was detected within the BAT error circle with a significance of 3-σ down to an upper limit of 2.0×10^{-3} cts.s^{-1}.

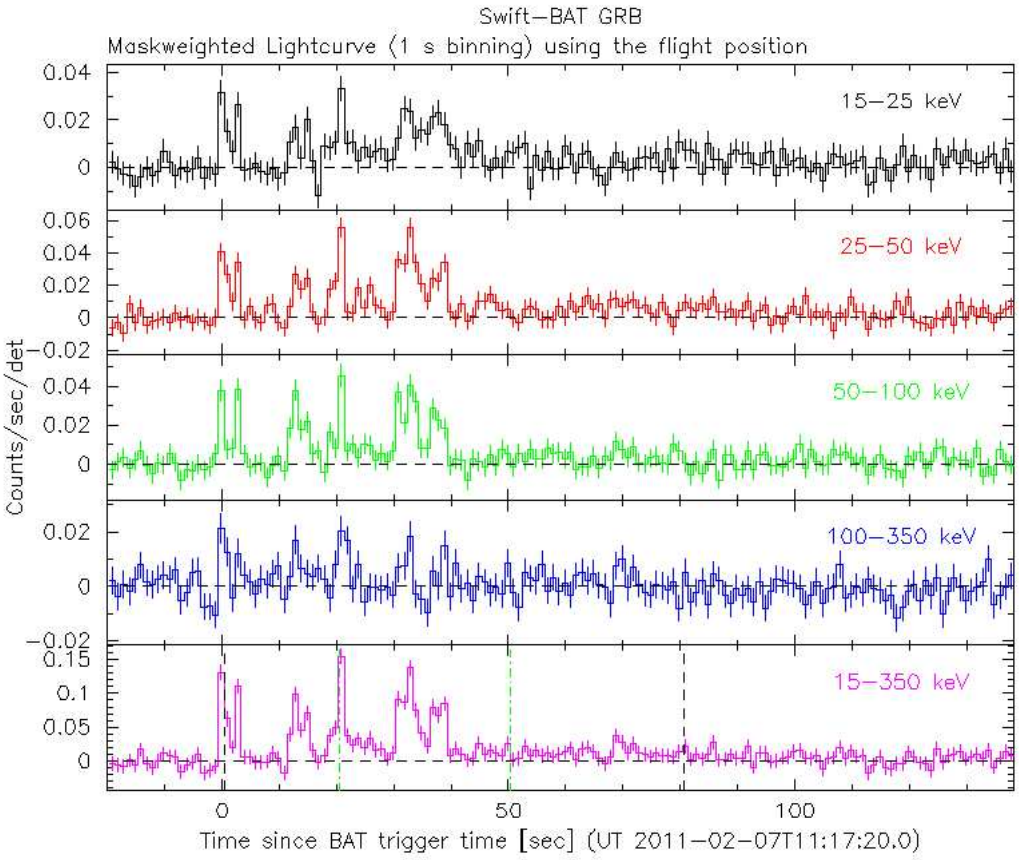

Figure 1: BAT Light curve. The mask-weighted light curve in the 4 individual plus total energy bands. The units are counts/sec/illuminated-detector (note illum-det = 0.16 cm^2) and T_0 is 11:17:20.0 UT.