Swift Observation of GRB 090708

H. A. Krimm (CRESST/GSFC/USRA), S.D. Barthelmy (GSFC) and C.B. Markwardt (CRESST/UMD/GSFC) for the Swift Team

1 Introduction

BAT triggered on GRB 090708 at 03:38:15 UT (Trigger 356776) (Krimm *et al.*, *GCN Circ.* 9621). This was an 4.096-sec rate-trigger on a intermediate length burst with $T_{90} = 15.0 \pm 3.9$ sec. Due to an observing constraint (the burst position was too close to the Sun), *Swift* was not able to slew to the burst. Since the constraint will last until October 2009, there will be no *Swift* XRT or UVOT observations. There were also no reports of optical detections. The best position is the BAT ground-calculated position (Palmer *et al.*, *GCN Circ.* 9623): RA($J2000$) = 154.632° (10h 18m 31.7s), Dec($J2000$) = +26.616° (+26°36′58″.7) with an error of 1.7 arcmin (radius, systematic plus statistical, 90% containment).

GRB 090708 was also probably detected by *Fermi*/GBM (GCN/FERMI notice).

2 BAT Observation and Analysis

Using the data set from T-239 to T+963 sec, further analysis of GRB 090423 was performed by the Swift/BAT team (Palmer et al., GCN 9623). The partial coding was 27%. The mask-weighted light curve (Figure 1) shows that main pulse began at T-2 sec, peaked at ≈T+4 sec and decayed by ≈T+16 sec. There is a hint of some low-level emission out to ≈T+100 sec (Figure 2). At T+160 sec, a pre-planned slew took the burst out of the BAT field of view. T_{90} (15-350 keV) is 15.0 ± 3.9 sec (estimated error including systematics).

The time-averaged spectrum from T-1.3 to T+17.7 sec is best fit by a simple power-law model. The power law index of the time-averaged spectrum is 1.78 ± 0.22. The fluence in the 15-150 keV band is $6.9 \pm 1.0 \times 10{-}7$ $erg\ cm^{-2}$. The 1-sec peak photon flux measured from T+3.37 sec in the 15-150 keV band is 1.3 ± 0.3 $ph\ cm^{-2}\ s^{-1}$. All the quoted errors are at the 90% confidence level.

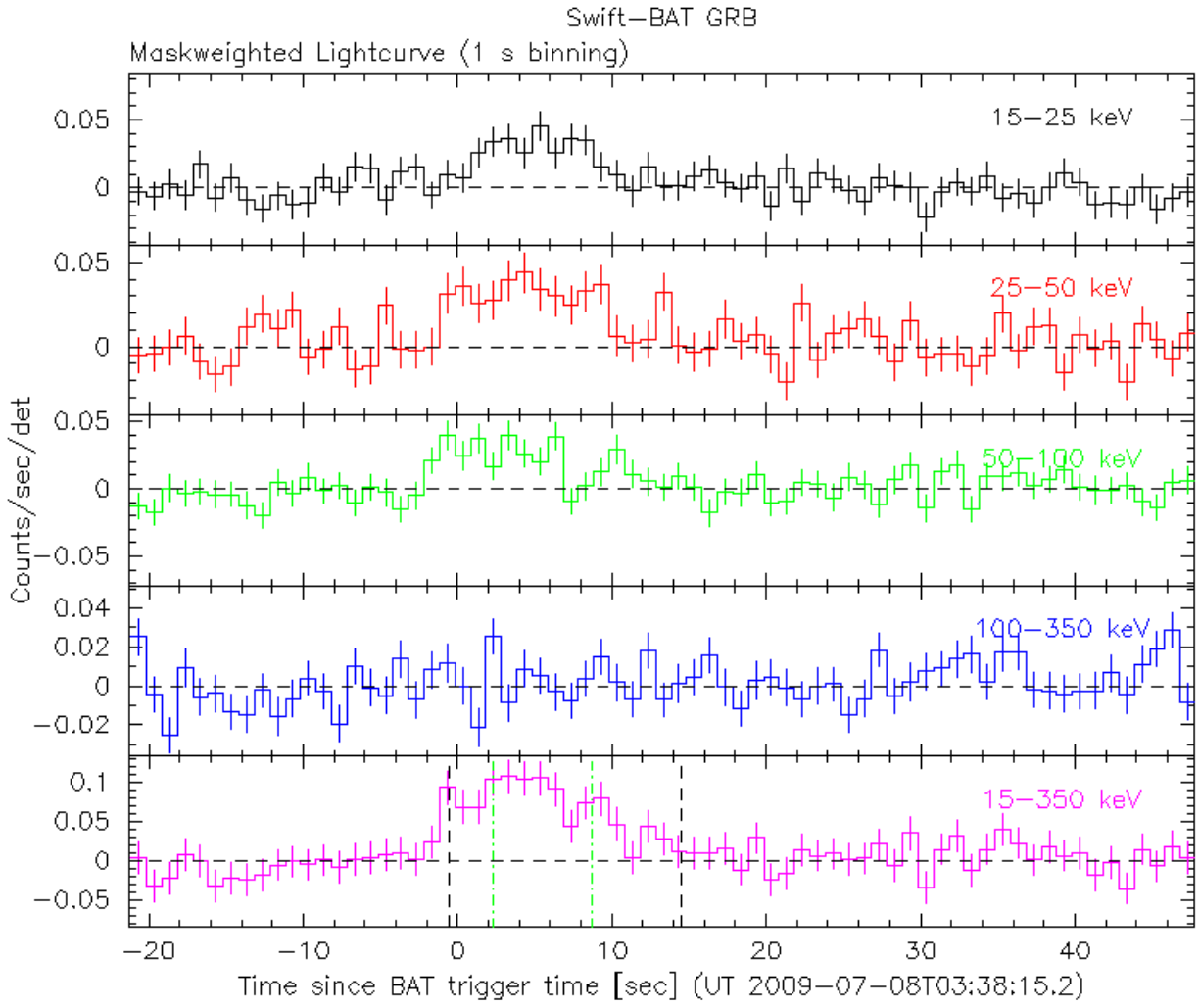

Figure 1: BAT Light curve. The mask-weighted light curve in the 4 individual plus total energy bands. The units are counts/sec/illuminated-detector (note illum-det = 0.16 cm^2).

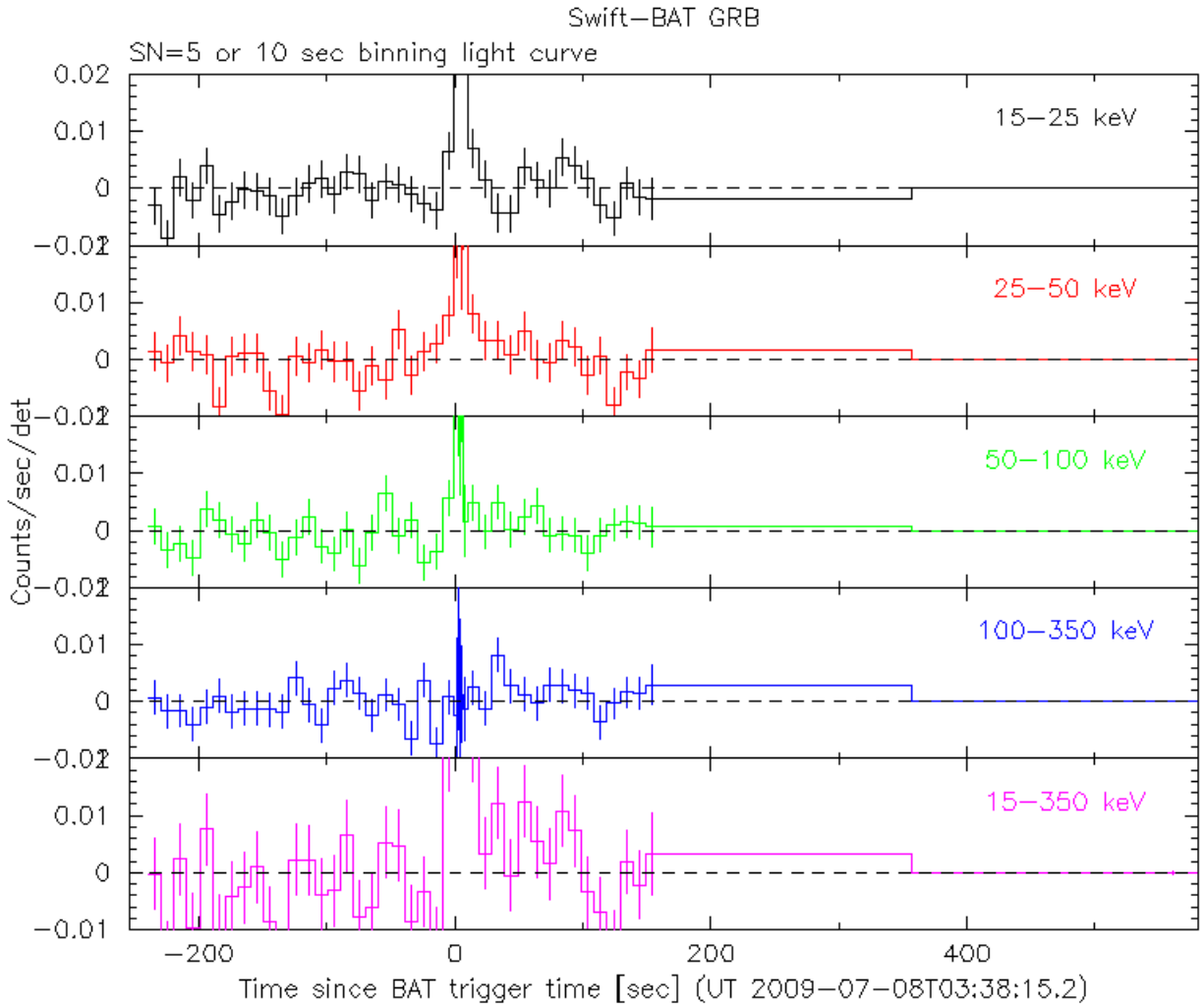

Figure 2: BAT Light curve. The extended mask-weighted light curve binned to emphasize late low-level emission. The units are counts/sec/illuminated-detector (note illum-det = 0.16 cm^2).