

Swift Observation of GRB 090715A

J. L. Racusin (PSU), W. H. Baumgartner (GSFC/UMBC), for the Swift Team

1 Introduction

BAT triggered on GRB 090715A at 17:25:39 UT (Trigger 357498) (Racusin *et al.*, *GCN Circ.* 9666). This was a 0.4 sec rate-trigger on a short hard burst with a hard spike and softer extended emission with $T_{90} = 63$ sec. *Swift* was not able to slew to this burst because it was Sun constrained. It will not come out of Sun constraint until October 9, 2009, at which time the afterglow will most likely be too faint to detect. Therefore, no *Swift* follow-up observations are planned. Our best position is the BAT location RA(*J*2000) = 152.102 deg (10h08m24.5s), Dec(*J*2000) = +10.006 deg (+10d00'22.4") with an uncertainty of 2.4 arcmin (radius, sys+stat, 90% containment).

Konus-Wind also detected the γ -ray emission (Golenetskii *et al.*, *GCN Circ.* 9682) and measured the spectrum in the range of 20 keV to 10 MeV including a fit to the peak energy ($E_p = 738_{-614}^{+3775}$ keV).

Optical follow-up by ROTSE-IIIc (Namibia) revealed no evidence for an optical counterpart (Pandey *et al.*, *GCN Circ.* 9667).

2 BAT Observation and Analysis

Using the data set from $T - 239$ to $T + 963$ sec, further analysis of BAT GRB 090715A has been performed by *Swift* team (Baumgartner *et al.*, *GCN Circ.* 9680). The partial coding was 22%.

The masked-weighted light curves (Fig.1) shows a single spike starting at $\sim T - 0.1$ sec, peaking at $\sim T + 0.1$ sec, and ending at $\sim T + 0.7$ sec. Following the initial spike, there is extended emission from $\sim T + 20$ to $\sim T + 55$ sec at a flux level ~ 50 times lower than the peak flux of the spike. $T_{90}(15 - 350$ keV) is 63 ± 18 sec (estimated error including systematics).

The time-averaged spectrum from $T - 0.1$ to $T + 67.8$ sec is best fit by a simple power law model. We note that this spectral analysis includes both the spike and the extended emission. Qualitatively, the spike is harder than the extended emission. The power law index of the time-averaged spectrum is 1.28 ± 0.42 . The fluence in the 15 - 150 keV band is $(9.8 \pm 2.2) \times 10^{-7}$ erg/cm². The 1-sec peak photon flux measured from $T - 0.11$ sec in the 15 - 150 keV band is 3.9 ± 0.5 ph/cm²/sec. All the quoted errors are at the 90% confidence level.

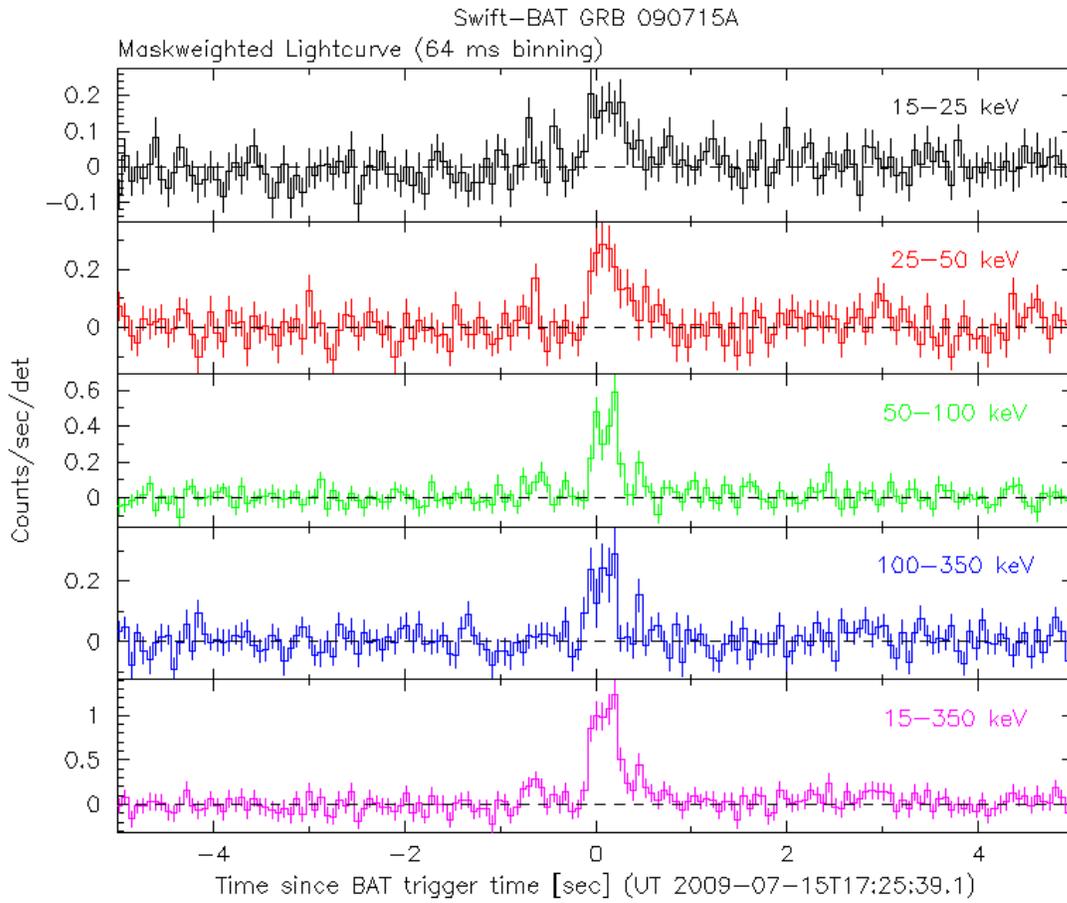


Figure 1: BAT Light curve. The mask-weighted light curve in the 4 individual plus total energy bands. The units are counts/sec/illuminated-detector and T_0 is 17:25:39 UT.