

Swift Observations of GRB 071011

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1. INTRODUCTION

At 12:40:13 UT, the Swift Burst Alert Telescope (BAT) triggered and located GRB 071011 (trigger 293924; Marshall *et al.* GCN Circ. 6882). Swift slewed to the burst ~ 2700 sec. after the trigger at the end of the observing constraint due to the Earth.

Cenko (GCN Circ. 6895) found a fading optical afterglow candidate, whose decay was confirmed by Perley *et al.* (GCN Circ. 6898) and Iizuka and Maeno (GCN Circ. 6900). Its position is $5.5''$ from the center of XRT position (Sbarufatti *et al.*, GCN Circ. 6902) of RA (J2000) = 00h 33m 33.1s and Dec (J2000) = $+61^\circ 07' 59.77''$, which is best Swift position.

2) BAT OBSERVATION AND ANALYSIS

The BAT ground-calculated position is RA (J2000) = 00h 33m 34.8s and Dec (J2000) = $61^\circ 07' 57''$ with an uncertainty of $1.3'$ (90% containment radius including both statistical and systematic errors). The partial coding was 37%.

The light curve (Figure 1) shows two roughly symmetric peaks. The first starts at $\sim T-10$ sec, peaks at $\sim T+1$ sec, and reaches a minimum at $\sim T+30$ sec. The second picks up at the minimum at $\sim T+30$ sec, peaks at $\sim T+46$ sec, and ends at $\sim T+90$ sec. T_{90} (15-350 keV) is 61 ± 1 sec (estimated error including systematics).

The time-averaged spectrum from T-9.5 to T+63.8 sec is best fit by a simple power-law model. The power law index of the time-averaged spectrum is 1.41 ± 0.12 . The fluence in the 15-150 keV band is $2.2 \pm 0.2 \times 10^{-8}$ erg-cm $^{-2}$. The 1-sec peak photon flux measured from T+45.98 sec in the 15-150 keV band is 1.7 ± 0.3 photons-cm $^{-2}$ -sec $^{-1}$. All the quoted errors are at the 90% confidence level.

3. XRT OBSERVATIONS AND ANALYSIS

We have analyzed the initial orbits of XRT data, which started at 2.7 ks after the trigger. The 6.6 ks exposure is in Photon Counting (PC) mode. In the first 1.6 ks of data, we detect a single, uncatalogued, fading source within the XRT field of view at a large off-axis angle at the position RA (J2000) = 00h 33m 33.1s and Dec (J2000) = $+61^\circ 07' 59.77''$ with an estimated uncertainty of $4.1''$ (90% containment radius). The uncertainty may be underestimated because the source was very near the edge of the field of view. The source was outside the field of view during the remainder of the observation because of an incorrect observatory pointing direction. The spectrum can be modeled with a power-law of photon index $\Gamma = 2.6 \pm 0.5$ with an absorbing column of $N_H = (1.5 \pm 0.7) \times 10^{22}$ cm $^{-2}$, in excess of the Galactic value of 5×10^{22} cm $^{-2}$. The observed (unabsorbed) flux is 1.26 (6.00) $\times 10^{-11}$ erg-cm $^{-2}$ -s $^{-1}$. The light curve shows a behavior consistent with a power-law decay with a slope of -1.0 ± 0.7 . All the quoted errors are at the 90% confidence level.

4. UVOT OBSERVATIONS AND ANALYSIS

UVOT did not make any observations of this GRB.

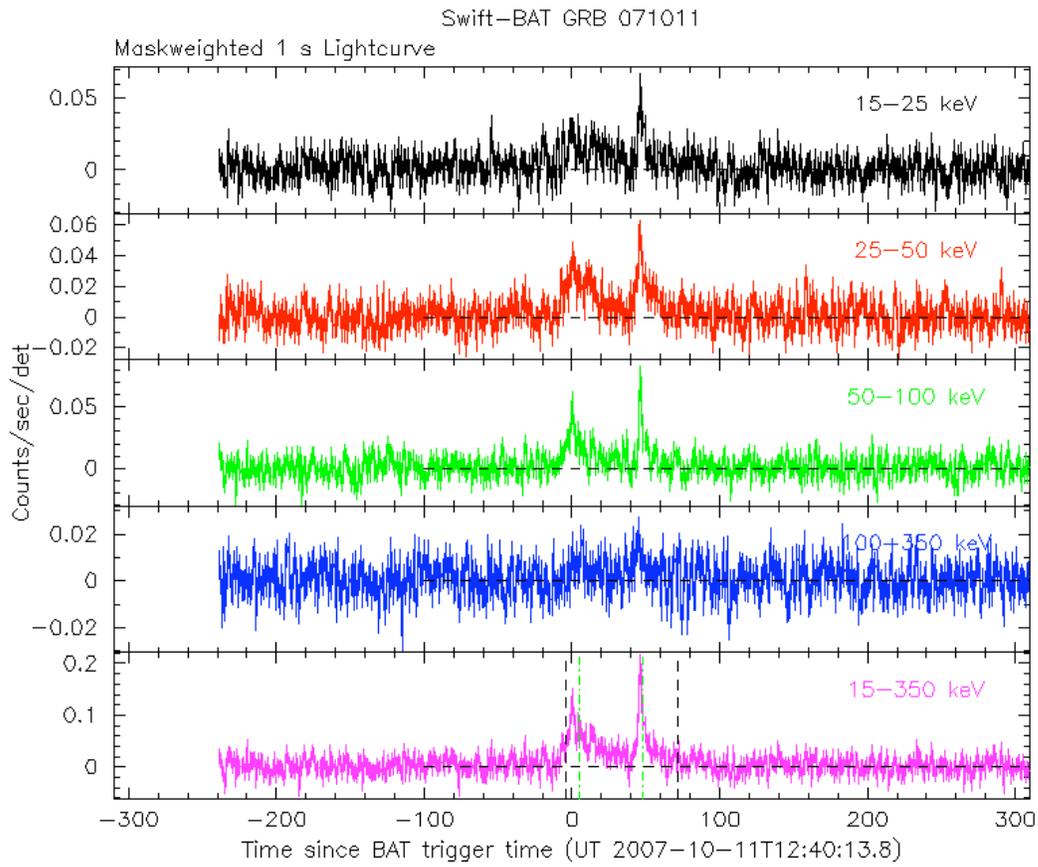


Fig.1: The BAT mask-weighted light curve in the 4 individual plus total energy bands. The units are counts s^{-1} illuminated-detector $^{-1}$. Each illuminated detector has an area of 0.16 cm^2 .