Swift Observation of GRB 071010

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1 Introduction

BAT triggered on GRB 071010 at 03:41:12 UT (Trigger 293707) (Moretti, *et al.*, *GCN Circ.* 6859). This was a 4.096-s rate-trigger on a long burst. Swift is in the process of returning to normal operations and it did not slew to this GRB because automatic slewing to GRBs is currently disabled outside of business hours (US EDT). Our best position is from Swift XRT, which is RA(J2000)= 288.06008 deg ($19^{\rm h}12^{\rm m}14.42^{\rm s}$), Dec(J2000)= -32.40172 deg ($-32^{\rm d}24'06.2''$) with an error of 5.3 arcsec (90% confidence).

2 BAT Observation and Analysis

Using the data set from $T - 239$ to $T + 394$ s from the recent telemetry downlink, we report further analysis of BAT GRB 071010 (Moretti *et al.*, *GCN Circ.* 6859). The BAT ground-calculated position is RA(J2000) = 288.040 deg ($19^{\rm h}12^{\rm m}09.7^{\rm s}$), Dec(J2000) = -32.385 deg ($-32^{\rm d}23'06''$) with an uncertainty of 2.5 arcmin, (radius, sys+stat, 90% containment). The partial coding was 42%.

The mask-weighted lightcurves (Fig. 1) show a single peak starting a $\sim T - 10$ s and ending at $\sim T + 20$ s. T_{90} (15–350 keV) is 6 ± 1 s (estimated error including systematics).

The time-averaged spectrum from $T - 1.1$ to $T + 5.9$ s is best fit by a simple power-law model. The power law index of the time-averaged spectrum is 2.33 ± 0.37. The fluence in the 15–150 keV band is $(2.0 \pm 0.4) \times 10^{-7}$ erg cm^{-2}. The 1-sec peak photon flux measured from $T + 0.80$ s in the 15–150 keV band is 0.8 ± 0.3 ph cm^{-2} s^{-1}. All the quoted errors are at the 90% confidence level (Krimm *et al.*, *GCN Circ.* 6868).

3 XRT Observations and Analysis

Swift XRT began observing the GRB 071010 at $T + 34$ ks. In 2.4 ks of Photon Counting mode data spanning from $T + 34$ to $T + 40$ ks we found the X-ray afterglow at RA(J2000)= 288.06008 deg ($19^{\rm h}12^{\rm m}14.42^{\rm s}$), Dec(J2000)= -32.40172 deg ($-32^{\rm d}24'06.2''$), with error circles of radius 5.3 arcsec (90%, including boresight uncertainties).

This lies 2.8 arcsec away from the position given by the Keck observation (Bloom *et al.*, *GCN Circ.* 6861) of the optical afterglow discovered by TAROT (Klotz *et al.*, *GCN Circ.* 6860) and 84.8 arcsec from the BAT refined position (Krimm *et al.*, *GCN Circ.* 6868).

At present, due to the paucity of the observed events, we are unable to determine the fading rate.

Detailed light curves in both count rate and flux units are available in both graphical and ASCII formats at http://www.swift.ac.uk/xrt_curves/.

4 UVOT Observation and Analysis

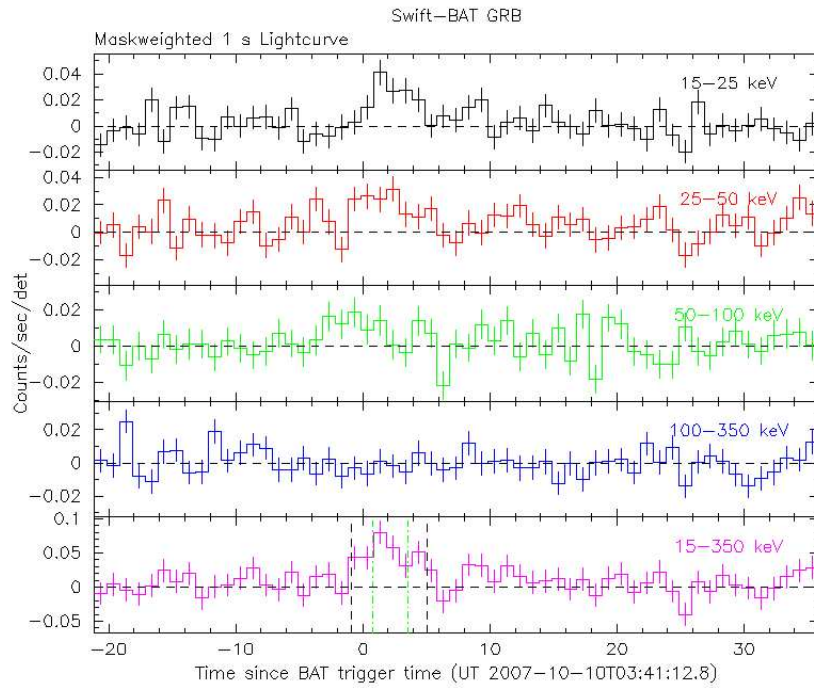The Swift UVOT did not observe this burst.

Figure 1: BAT Light curve. The mask-weighted light curve in the 4 individual plus total energy bands. The units are counts/s/illuminated-detector (note illum-det $= 0.16$ cm^2) and T_0 is 03:41:12 UT.
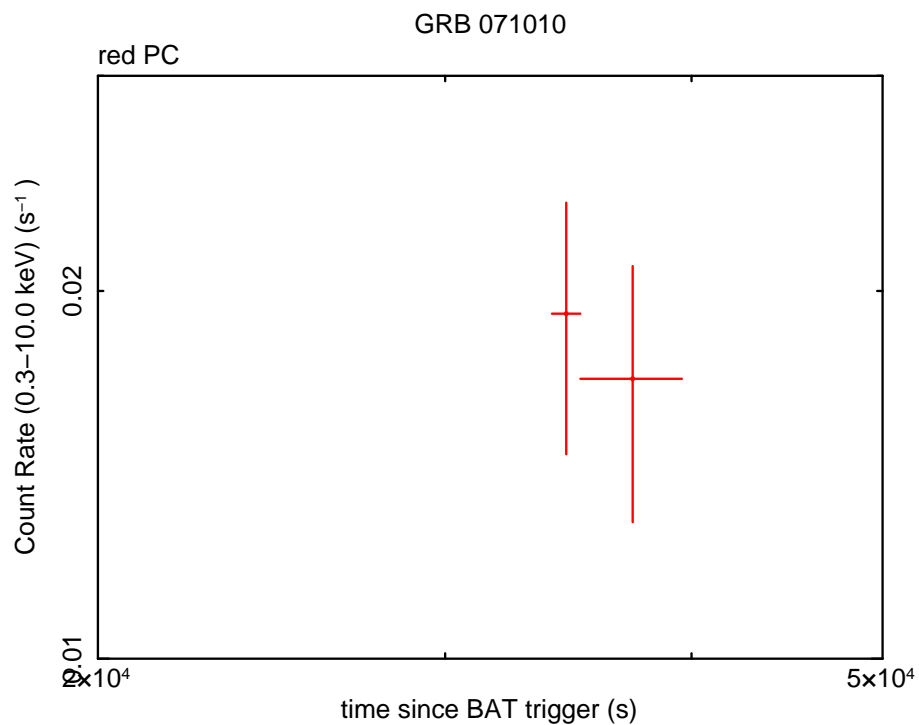

Figure 2: XRT Lightcurve. Count rate in the 0.3-10 keV band: Photon Counting mode.