

GCN Report 11.1 28oct06 16:00:00 UT

Swift Observations of GRB 061028

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1. INTRODUCTION

At 01:26:22 UT, the Swift-BAT triggered and located GRB 061028 (trigger=235715) (Sakamoto et al, GCN Circ 5762). Swift slewed immediately to the burst. XRT and UVOT began observing the field at 01:29:40 UT, 198 seconds after the BAT trigger (this was a 128-sec image trigger). Our best position is the XRT position RA,Dec(J2000) = 06h 28m 54.5s, +46d 17' 55.4".

2. BAT OBSERVATION AND ANALYSIS

The BAT ground-calculated position is RA,Dec = 97.193, 46.290 deg {6h 28m 46.3s, 46d 17' 25.1"} (J2000) +- 2.5 arcmin, (radius, sys+stat, 90% containment). The partial coding was 35%. This burst was 30.1 deg off the boresight.

The mask-weighted lightcurve shows several weak pulses starting from T+55 sec, and the highest peak at T+81 sec. The weak tail emission ends around T+300 sec. T90 (15-350 keV) is 106 +- 5 sec (estimated error including systematics).

The time-averaged spectrum from T+47 to T+166 is best fit by a simple power-law model. The power law index of the time-averaged spectrum is 1.73 +- 0.30. The fluence in the 15-150 keV band is 9.7 +- 1.7 x 10⁻⁰⁷ erg/cm². The 1-sec peak photon flux measured from T+79.94 sec in the 15-150 keV band is 0.7 +- 0.2 ph/cm²/sec. All the quoted errors are at the 90% confidence level.

3. XRT OBSERVATION AND ANALYSIS

We have analyzed the first 4 orbits of Swift-XRT data obtained for GRB 061028 (trigger=235715, GCN 5762). The data consist of 100 sec in Windowed Timing (WT) mode, starting 205 seconds after the BAT trigger and 8 ksec in Photon Counting (PC) mode.

Using PC data we obtain a refined position of RA,Dec(J2000) = 06h 28m 54.53s, +46d 17' 55.20" with an estimated uncertainty radius of 3.9 arcsec (90% containment) taking into account the new TELDEF files. This location is 0.4 arcsec from the first XRT position (GCN 5762).

The light-curve shows a steep decay ($\alpha=3.9\pm 0.4$) up to the end of the second orbit. Data relative to the next two orbits show a detection at 3 sigma level with a count rate of $(3\pm 1)E-3$ corresponding to a flux of 1.5E-13 erg/cm²/sec, significantly higher than the model extrapolation.

The spectrum from all the WT data can be modeled with a power law of photon index $\Gamma = 1.4 \pm 0.1$, with an absorbing column of $NH = (2.4\pm 0.6)E21$ cm⁻², significantly higher than the Galactic value of 1.37E21 cm⁻². The 0.2-10 keV unabsorbed flux during the WT is 5.7E-10 erg/cm²/sec. The spectrum from the PC data is softer than the WT spectrum: it can be modeled with a power-law of photon index $\Gamma = 2.4\pm 0.4$. All errors are quoted at 90% confidence level.

4. UVOT OBSERVATION AND ANALYSIS

No new source was detected within the XRT error circle in coadded images in any filter down to the following 3-sigma magnitude upper limits in Table 1.

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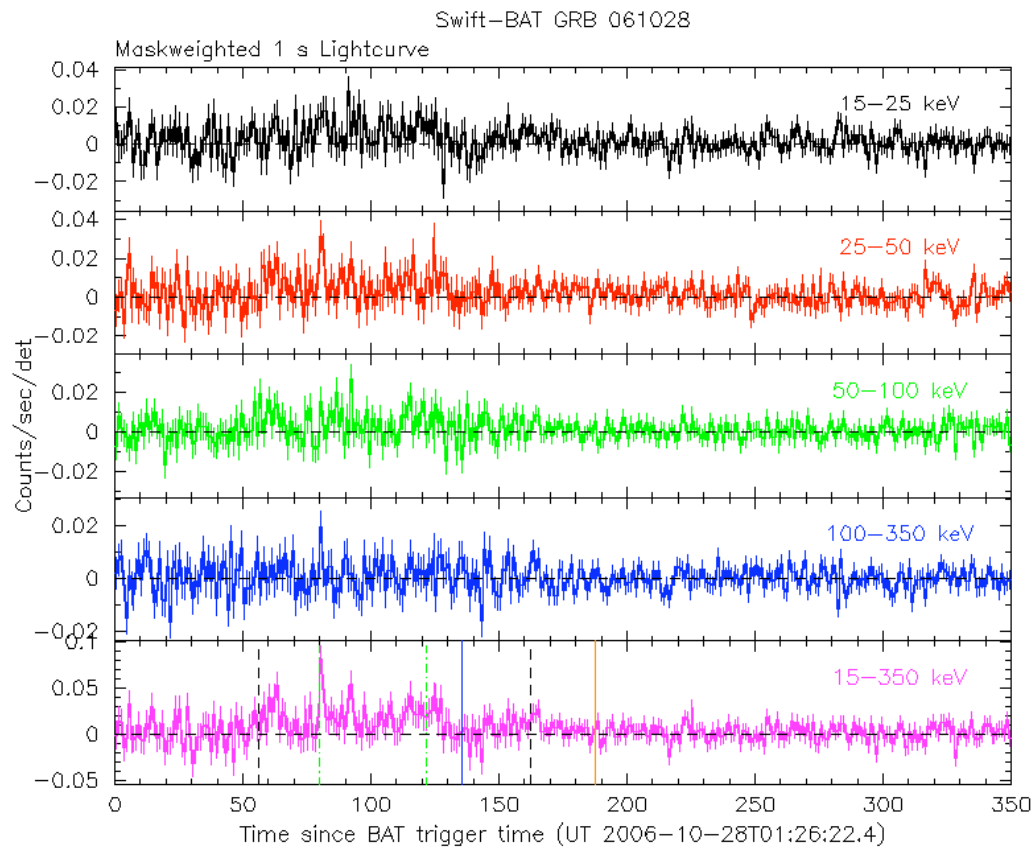


Fig.1: BAT Lightcurve. The light curve in the 4 individual plus total energy bands. The units are counts/sec/illuminated-detector (note illum-det = 0.16 cm²) and T₀ is 1:26:22 UT.

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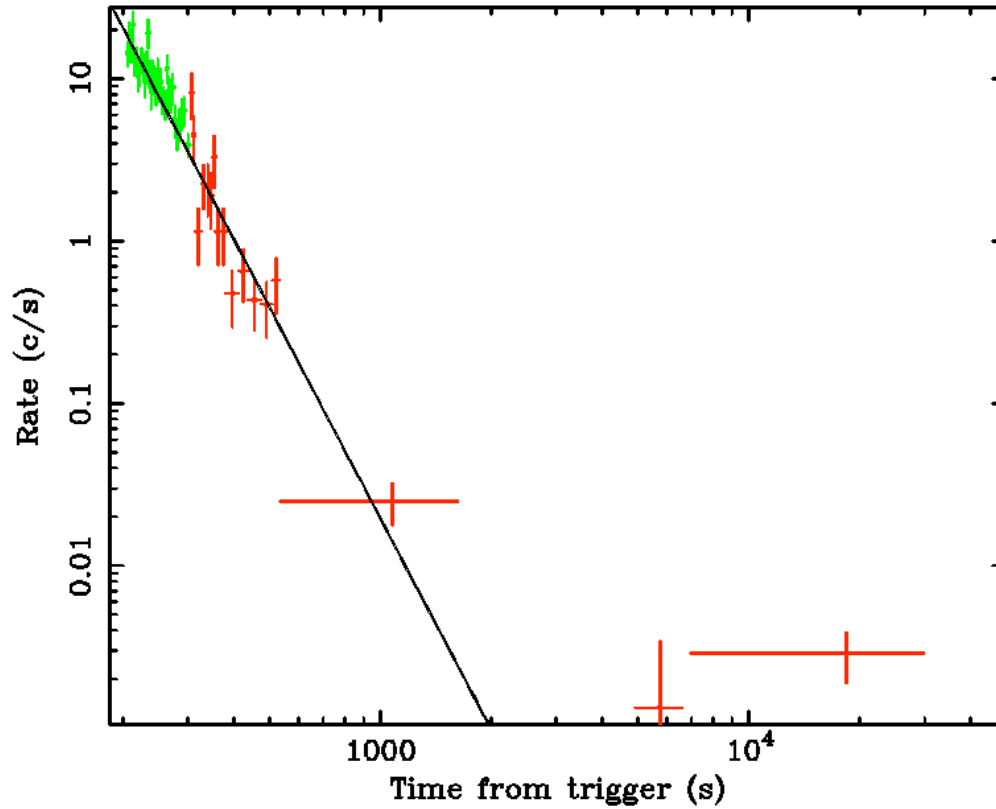


Fig. 2: XRT Lightcurve. Counts/sec in the 0.3-10 keV band: Window Timing (WT) mode in blue and Photon Counting (PC) mode in red.

Table 1: UVOT Upper Limits.

Filter	Start(s)	End(s)	Exposure(s)	3-sigma UL
V	190	6596	747	20.6
B	410	6131	274	20.3
U	386	5926	313	19.9
W1	362	5722	313	18.5
M2	338	5517	313	19.4
W2	438	6541	471	19.3
WHITE	208	6335	443	18.9

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