

## Swift Observation of GRB 070731

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### 1 Introduction

BAT triggered on GRB 070731 at 9:33:22 UT (trigger=286574). The spacecraft did not slew to the location because of a Moon constraint. It came out of Moon constraint on 02 Aug, after 40 hours. Moreover this burst occurred during a 42-min outage in the TDRSS service and so all the normal real-time messages were not sent to the ground. No UVOT and XRT counterpart were found in the follow-up observations.

### 2 BAT Observation and Analysis

Using the data set from  $T-240$  to  $T+302$  s, the BAT ground-calculated position is RA, Dec = 328.581, -15.740 deg which is RA(J2000) = 21h 54m 19.5s Dec(J2000) = -15d 44' 23" with an uncertainty of 1.9 arcmin, (radius, sys+stat, 90% containment). The partial coding was 49%.

The mask-weighted lightcurve (Fig. 1) shows a single peak starting at  $\sim T-0.5$  s, peaking at  $\sim T+0.7$ , and ending at  $\sim T+3$  sec. There is no indication of any other emission prior and past the trigger. We note that there is a gap in the currently downloaded data set from  $T+120$  to  $T+190$  s.  $T_{90}$  (15-350 keV) is  $2.9 \pm 0.2$  s (estimated error including systematics).

The time-averaged spectrum from  $T-0.1$  to  $T+3.0$  sec is best fit by a simple power-law model. The power law index of the time-averaged spectrum is  $1.65 \pm 0.23$ . The fluence in the 15-150 keV band is  $1.6 \pm 0.3 \times 10^{-7}$  erg  $\text{cm}^{-2}$ . The 1-sec peak photon flux measured from  $T-0.14$  sec in the 15-150 keV band is  $1.2 \pm 0.2$  ph  $\text{cm}^{-2} \text{s}^{-1}$ . All the quoted errors are at the 90% confidence level.

### 3 XRT Observations and Analysis

XRT observation started 2007-08-02 at 01:28:07 (1.6 days after the burst) and stopped on 2007-08-04 22:49:57 (3.5 days after the burst) for a total of 49 ks of effective exposure. No XRT source was detected within the BAT error circle, with a mean flux  $3\sigma$  upper limit of  $10^{-14}$  erg  $\text{cm}^{-2} \text{s}^{-1}$ .

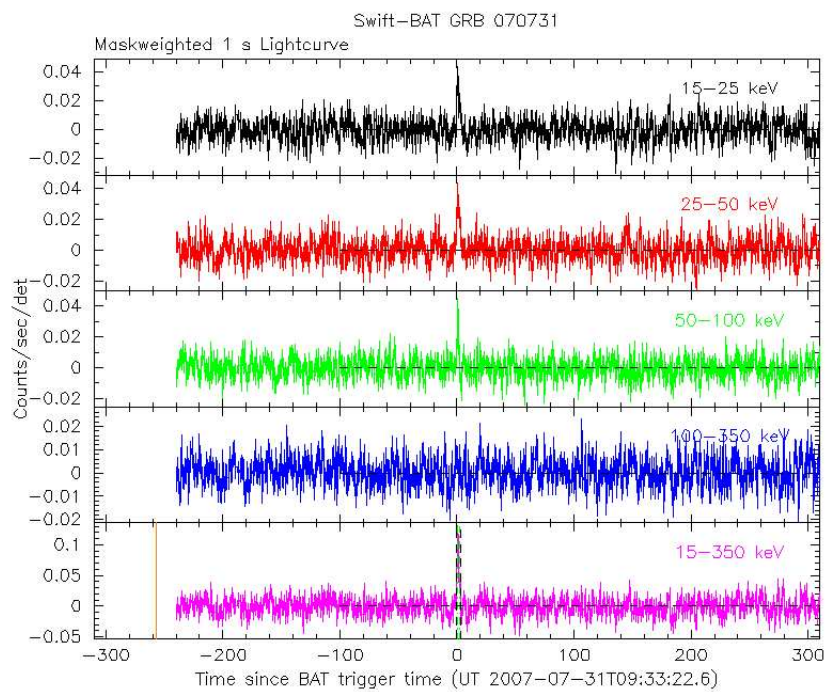


Figure 1: BAT Light curve. The mask-weighted light curve in the 4 individual plus total energy bands. The units are counts/s/illuminated-detector