

Swift Observations of GRB 070427

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1 Introduction

BAT triggered on GRB 070427 at 08:31:08.9 UT (Trigger 277356) (Sato, *et al.*, *GCN Circ.* 6352). This was a 1.024 sec rate-trigger on a burst with $T_{90} = 11 \pm 1$ sec. This burst was too close to the Sun (42 degrees) for Swift to slew to it. Our best position is the BAT location RA (J2000) = 01h55m29.1s, Dec (J2000) = $-27^{\circ}36'11''.2$ with an error of 1.0 arcmin (radius, sys+stat, 90% containment). The GRB will become observable by the XRT and UVOT on May 5.

2 BAT Observation and Analysis

Using the data set from $T - 240$ to $T + 962$ sec, the BAT ground-calculated position is RA (J2000) = 28.871° (01h55m29.1s), Dec (J2000) = -27.603° ($-27^{\circ}36'11''.2$) with an uncertainty of 1.0 arcmin (radius, sys+stat, 90% containment). The partial coding was 100% (the boresight angle was 14.8°).

The mask weighted light curve (Figure 1) steeply rises at $\sim T + 0$ sec, exhibiting some multi-peak sub structure, falling more gradually until $\sim T + 20$ sec, with trivial emission above 100 keV. T_{90} (15–350 keV) is 11 ± 1 sec (estimated error including systematics).

The time-averaged spectrum from $T - 0.2$ to $T + 13.7$ is best fit by a simple power-law model. The power law index of the time-averaged spectrum is 2.08 ± 0.10 . The fluence in the 15–150 keV band is $7.2 \pm 0.4 \times 10^{-7}$ ergs cm^{-2} . The 1-sec peak photon flux measured from $T + 6.79$ sec in the 15–150 keV band is 1.3 ± 0.1 ph $\text{cm}^{-2} \text{s}^{-1}$. All the quoted errors are at the 90% confidence level.

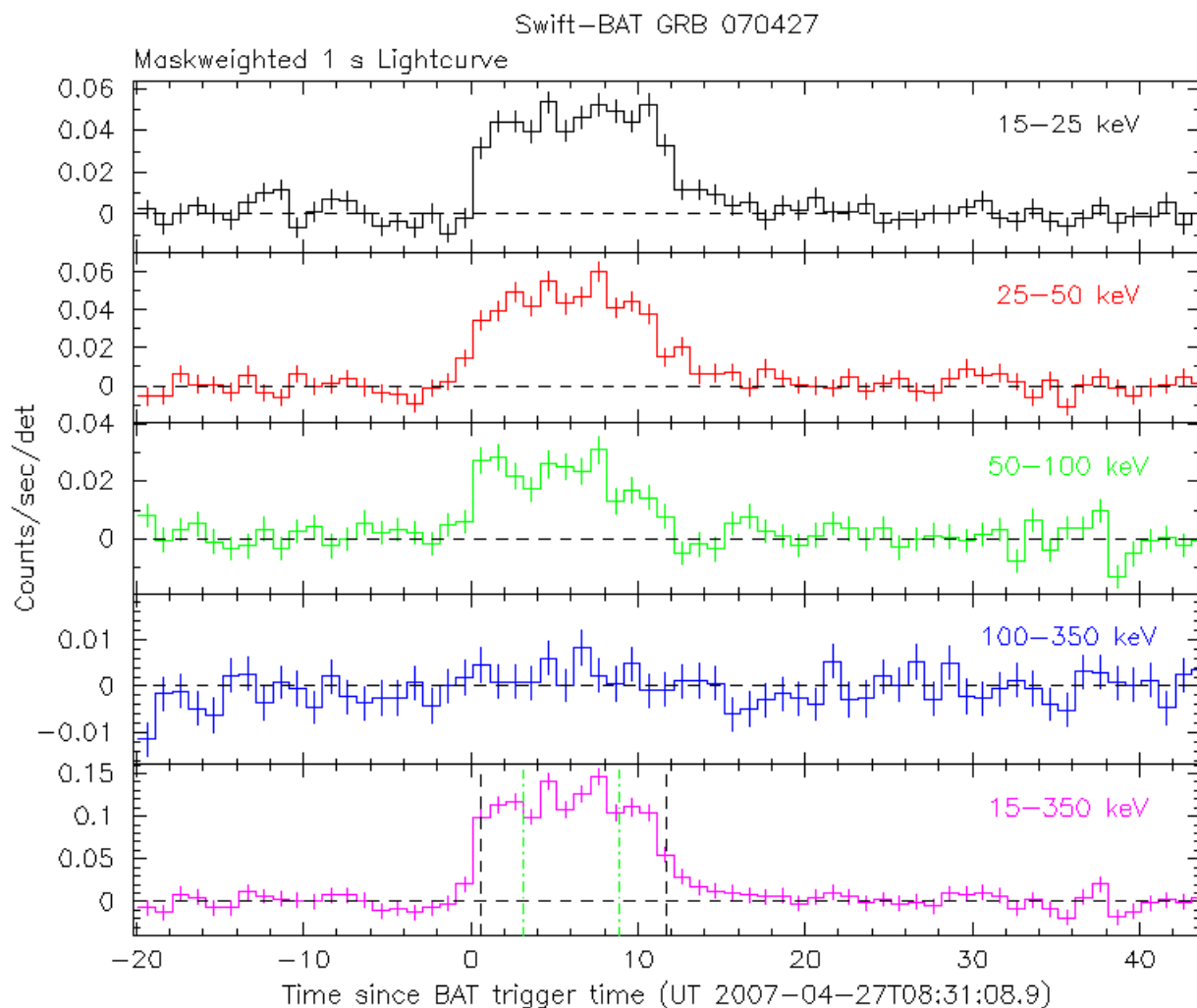


Figure 1: BAT light curve for GRB 070427. The mask-weighted light curve in the 4 individual plus total energy bands. The units are counts/sec/illuminated-detector and T_0 is 08:31:08.9 UT.