

## Swift Observations of GRB 120229A

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### 1 Introduction

BAT triggered on GRB 120229A at 14:35:11 UT, (trigger 516571, Mangano *et al.*, *GCN Circ.* 12997). This was a rate-trigger on a short burst with  $T_{90} = 0.22 \pm 0.03$  s. Due to a Sun observing constraint, Swift could not slew to the BAT position: there could thus be no XRT or UVOT data for this trigger.

Our best available position is based on the BAT refined analysis data:

RA( $J2000$ ) = 20.033 *deg* (01<sup>h</sup> 20<sup>m</sup> 07.9<sup>s</sup>) Dec( $J2000$ ) = -35.796 *deg* (-35<sup>d</sup> 47' 44.0") with an uncertainty of 1.9 arcmin (radius, sys+stat, 90% containment, Markwardt *et al.*, *GCN Circ.* 12998).

### 2 BAT Observation and Analysis

Using the data set from T-60 to T+243 s from the telemetry downlink, the refined analysis of BAT GRB 120229A was performed by the Swift team and reported in Markwardt *et al.*, *GCN Circ.* 12998.

The BAT ground-calculated position is RA( $J2000$ ) = 20.033 *deg* (01<sup>h</sup> 20<sup>m</sup> 07.9<sup>s</sup>) Dec( $J2000$ ) = -35.796 *deg* (-35<sup>d</sup> 47' 44.0") with an uncertainty of 1.9 arcmin, (radius, sys+stat, 90% containment). The partial coding was 85%.

The mask-weighted light curve (Fig.1) shows two peaks, the first about 0.08 s long peaking at  $\sim T+0.03$  s and the second about 0.14 s long peaking at  $\sim T+0.21$  s.  $T_{90}$  (15–350 keV) is  $0.22 \pm 0.03$  s (estimated error including systematics). The spectral lag (Barthelmy *et al.*, *GCN Circ.* 12999) is  $0.8 \pm 8$  ms using the 50–100 and 15–25 keV bands and  $3.6^{+5}_{-7}$  ms using the 100–350 and 25–50 keV bands with 4-ms binning of the raw lightcurves. These lag values place this burst in the short burst category.

The time-averaged spectrum from T+0.01 to T+0.27 s is best fit by a simple power-law model. The power law index of the time-averaged spectrum is  $1.29 \pm 0.24$ . The total fluence in the 15–150 keV band is  $(4.1 \pm 0.7) \times 10^{-8}$  erg cm<sup>-2</sup>. The 1-s peak photon flux measured from T-0.36 s in the 15–150 keV band is  $0.5 \pm 0.1$  ph cm<sup>-2</sup> s<sup>-1</sup>. All the quoted errors are at the 90% confidence level.

The results of the batgrbproduct analysis are available at  
[http://gcn.gsfc.nasa.gov/notices\\_s/516571/BA/](http://gcn.gsfc.nasa.gov/notices_s/516571/BA/)

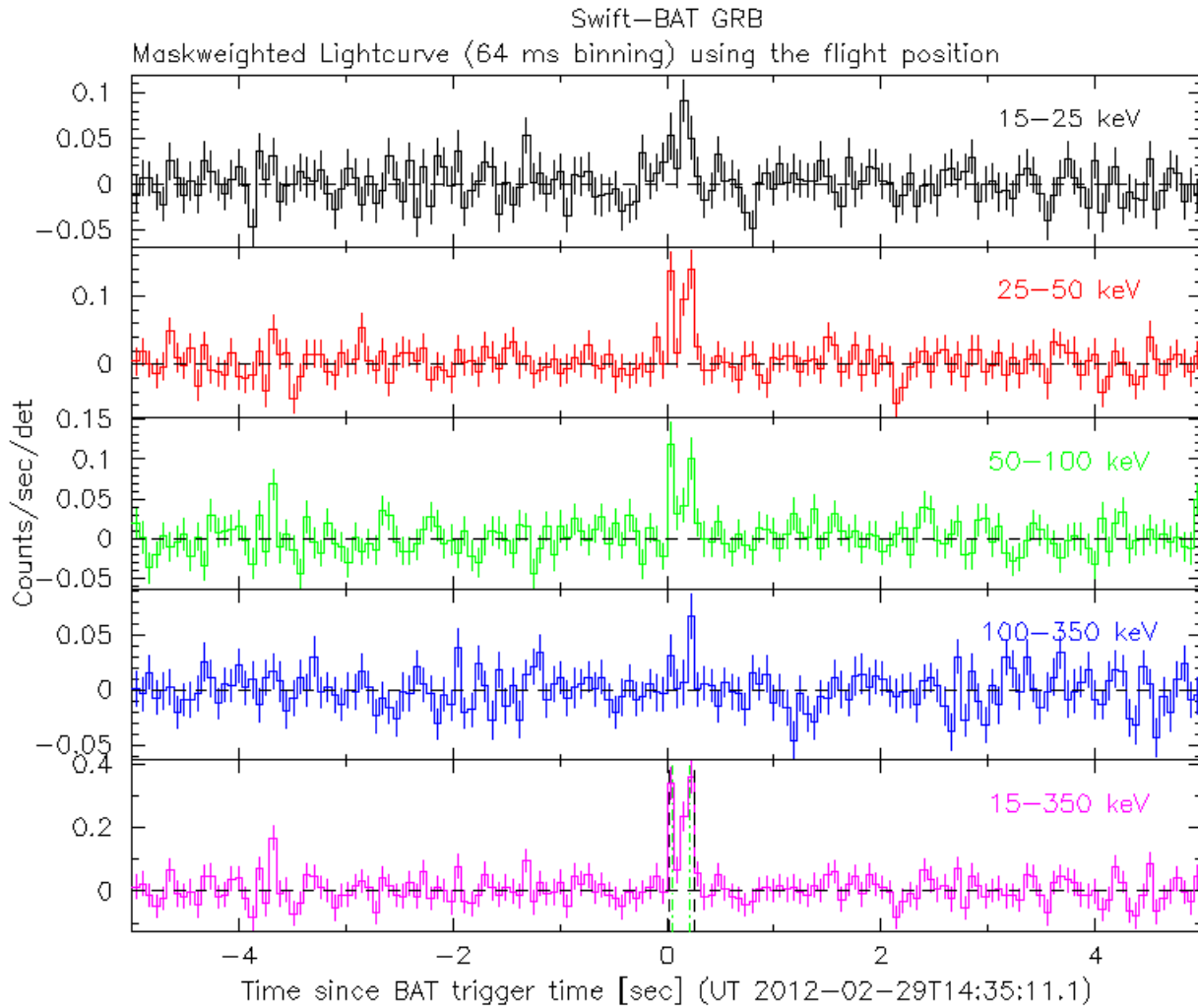


Figure 1: BAT Light curve. The mask-weighted light curve in the 4 individual plus total energy bands. The units are counts  $s^{-1}$  illuminated-detector $^{-1}$  (note illum-det = 0.16  $cm^2$ ) and  $T_0$  is 2012 Feb 29 14:35:11 UT.