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\(\text{h}\) 20\(\text{m}\) 07.9\(\text{s}\)) Dec(J2000) = −35.796 deg (−35\(\text{d}\) 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\(\text{h}\) 20\(\text{m}\) 07.9\(\text{s}\)) Dec(J2000) = −35.796 deg (−35\(\text{d}\) 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±0.03 s
(estimated error including systematics). The spectral lag (Barthelmy et al., GCN Circ. 12999) is
0.8±8 ms using the 50–100 and 15–25 keV bands and 3.6\(\pm\)2 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 ± 0.24. The total fluence in the 15–150 keV
band is (4.1±0.7)\times10^{-8} \text{ erg cm}^{-2}. The 1–s peak photon flux measured from T−0.36 s in the 15–150 keV band is 0.5 ± 0.1 \text{ ph cm}^{-2} \text{ s}^{-1}. 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/
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.