

Swift Observations of GRB 090301A

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1. Introduction

At 06:55:55 UT, the Swift Burst Alert Telescope (BAT) triggered and located GRB 090301A (trigger=344582) (Vetere et al., GCN Circ. 8920). Swift could not slew to the burst due to its proximity to the Sun (34 degrees).

The BAT ground-calculated position is RA, Dec = 338.142, 26.639 deg, which is

RA(J2000) = 22h 32m 34.2s

Dec(J2000) = +26d 38' 19.0"

with an uncertainty of 1.0 arcmin, (radius, sys+stat, 90% containment) (Fenimore et al., GCN Circ. 8923).

This GRB was also observed Integral/SPI-ACS (private communication with V. Beckmann, <http://isdc.unige.ch/Soft/ibas/results/triggers/spiacs/2009-03/2009-03-01T06-55-52.5147-17710-00007-0.png>) and by Konus-Wind (Golenetskii, et al., GCN Circ. 8924).

2. BAT Observations and Analysis

The mask-weighted light curve shows a complex of overlapping and separated peaks starting at ~T-20 sec and ending some time after T+86 sec at which time the burst location went out the BAT FOV when Swift slewed to the next planned target. T₉₀ (15-350 keV) is 41.0 ± 2.2 sec (estimated error including systematics).

The time-averaged spectrum from T-17.0 to T+72.2 sec is best fit by a power law with an exponential cutoff. This fit gives a photon index 1.08 ± 0.12 and E_{peak} of 343.3 ± 328.8 keV (chi squared 37.39 for 56 d.o.f.). For this model the total fluence in the 15-150 keV band is $2.3 \pm 0.03 \times 10^{-5}$ erg/cm² and the 1-sec peak flux measured from T+23.07 sec in the 15-150 keV band is 18.7 ± 0.6 ph/cm²/sec. A fit to a simple power law gives a photon index of 1.25 ± 0.03 (chi squared 43.70 for 57 d.o.f.). All the quoted errors are at the 90% confidence level (Fenimore et al., GCN Circ. 8923).

3. XRT Observations and Analysis

Swift could not slew to the burst due to its proximity to the Sun. Given that the burst location will not come out of the Sun observing constraint until after April 15th, we will not have any data on this burst.

4. UVOT Observations and Analysis

Swift could not slew to the burst due to its proximity to the Sun. Given that the burst location will not come out of the Sun observing constraint until after April 15th, we will not have any data on this burst.

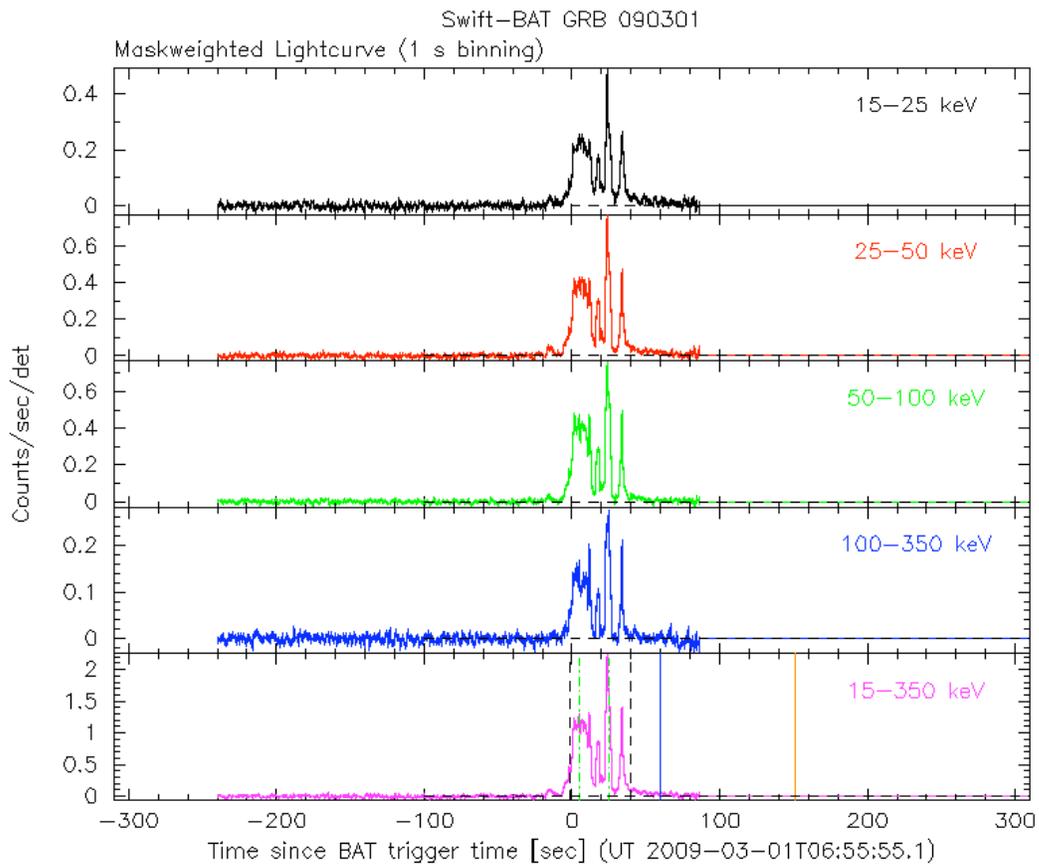


Fig.1: BAT Lightcurve. The light curve in the 4 individual plus total energy bands. The units are counts/sec/illuminated-detector