

Swift Observation of GRB 090401A

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report on behalf of the Swift Team:

1 Introduction

BAT triggered on GRB 090401A at 00:00:59 UT (Trigger 348128) (Schady, et al., *GCN Circ.* 9062), although *Swift* did not slew to this burst due to a Sun constraint. This was a 64.0 sec image trigger with a significance of 10.41. GRB 090401A was a long, multi-peaked burst, with $T_{90} = 112 \pm 15$ sec. The best position is the BAT ground-calculated location, RA(*J*2000) = 350.920 deg (23h23m40.8s), Dec(*J*2000) = 29.762 deg (+29d45'44.1") with a 90% error circle of 1.0 arcmin.

GRB 090401A was also detected by INTEGRAL SPI/ACS, Suzaku (Suzuki, et al., *GCN Circ.* 9085), as well as Konus-Wind (Golenetskii, et al., *GCN Circ.* 9071).

GRB 090401A will not come out of Sun constraint until 2nd May, at which time no further *Swift* observations are planned.

2 BAT Observation and Analysis

Using the data set from $T - 239$ to $T + 713$ sec, the BAT ground-calculated position is RA(*J*2000) = 350.920 deg (23h23m40.8s), Dec(*J*2000) = 29.762 deg (+29d45'44.1") ± 1.1 arcmin, (radius, systematic and statistical, 90% containment) (Sato, et al., *GCN Circ.* 9064). The partial coding was 38%.

The masked-weighted light curve (Fig.1) starts out at $T - 20$ sec, when the burst location first came into the BAT field of view during a planned-target slew maneuver, although there is evidence that the emission started prior to this. There are two small peaks at $T + 0$ sec and $T + 30$ sec, followed by the main emission, which consisted of a series of at least 7 overlapping peaks starting at $\sim T + 95$ sec and returning to background at $\sim T + 190$ sec. T_{90} (15-350 keV) is 112 ± 15 sec (estimated error including systematics).

The time-averaged spectrum from $T - 9.4$ to $T + 160.0$ sec is best fitted by a simple power-law model. The power law index of the time-averaged spectrum is 1.70 ± 0.05 . The fluence in the 15–150 keV band is $(1.1 \pm 0.0) \times 10^{-5}$ erg cm⁻² and the 1-sec peak flux measured at $T + 122.05$ sec in the 15–150 keV band is 10.9 ± 0.5 ph cm⁻² sec⁻¹. All the quoted errors are at the 90% confidence level.

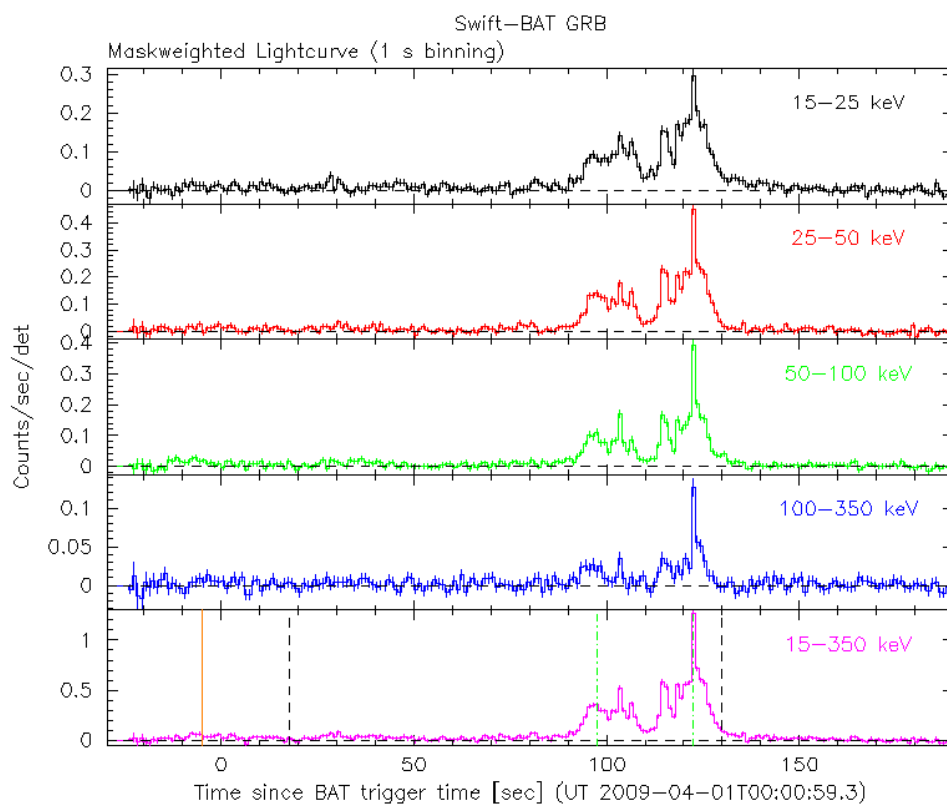


Figure 1: BAT Light curve. The mask-weighted 1-sec light curve in the 4 individual plus total energy bands. The units are counts/sec/illuminated-detector and T is 00:00:59 UT.