

## Swift Observation of GRB 090410

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### 1 Introduction

At 16:57:52 UT on 2009 April, the Swift Burst Alert Telescope (BAT) triggered on GRB 091004 (Grupe et al. *GCN Circ.* 9122). Swift could not slew to the GRB because it was sun-constrained until April 14. No further observations were planned or performed.

### 2 BAT Observation and Analysis

At 16:57:52 UT on 2009 April 10, the Swift BAT triggered on GRB 090410 (trigger #348929). The BAT ground-calculated position is RA, Dec = 334.956, +15.419 deg (Barthemly et al. *GCN Circ.* 9123), which is

$$\text{RA(J2000)} = 22\text{h } 19\text{m } 49.4\text{s}$$

$$\text{Dec(J2000)} = +15^{\circ}25'08.6''$$

with an uncertainty of  $1.8'$  (radius, 90% containment, including systematic uncertainty). The partial coding was 100%.

The mask-weighted light curve shows two main peaks with some precursor activity. The precursor activity starts at T-55 s. And because the target location only came into the BAT FOV at T-110 s, there may have been even earlier activity. The first main peak started at T-10 s, peaked at T+7 s, and ended around T+45 s. The second main peak started at T+80 s, peaked at T+120 s, and returned to baseline T+170 s. The burst location left the BAT FOV at T+390 s.  $T_{90}$  (15-350 keV) is  $165 \pm 8$  s (estimated error including systematics).

The time-averaged spectrum from T-49.2 to T+139.4 s is best fit by a simple power-law model. The photon index of the time-averaged spectrum is  $\Gamma = 1.19 \pm 0.05$ . The fluence in the 15-150 keV band is  $(5.6 \pm 0.2) \times 10^{-6}$  ergs  $\text{cm}^{-2}$ . The 1s peak photon flux measured from T+8.90 s in the 15-150 keV band is  $(1.9 \pm 0.1)$  photons  $\text{cm}^{-2} \text{ s}^{-1}$ . The results of the batgrbproduct analysis are available at [http://gcn.gsfc.nasa.gov/notices\\_s/348929/BA/](http://gcn.gsfc.nasa.gov/notices_s/348929/BA/)

### 3 XRT and UVOT

Due to the sun-constraint, no XRT and UVOT observations were obtained.

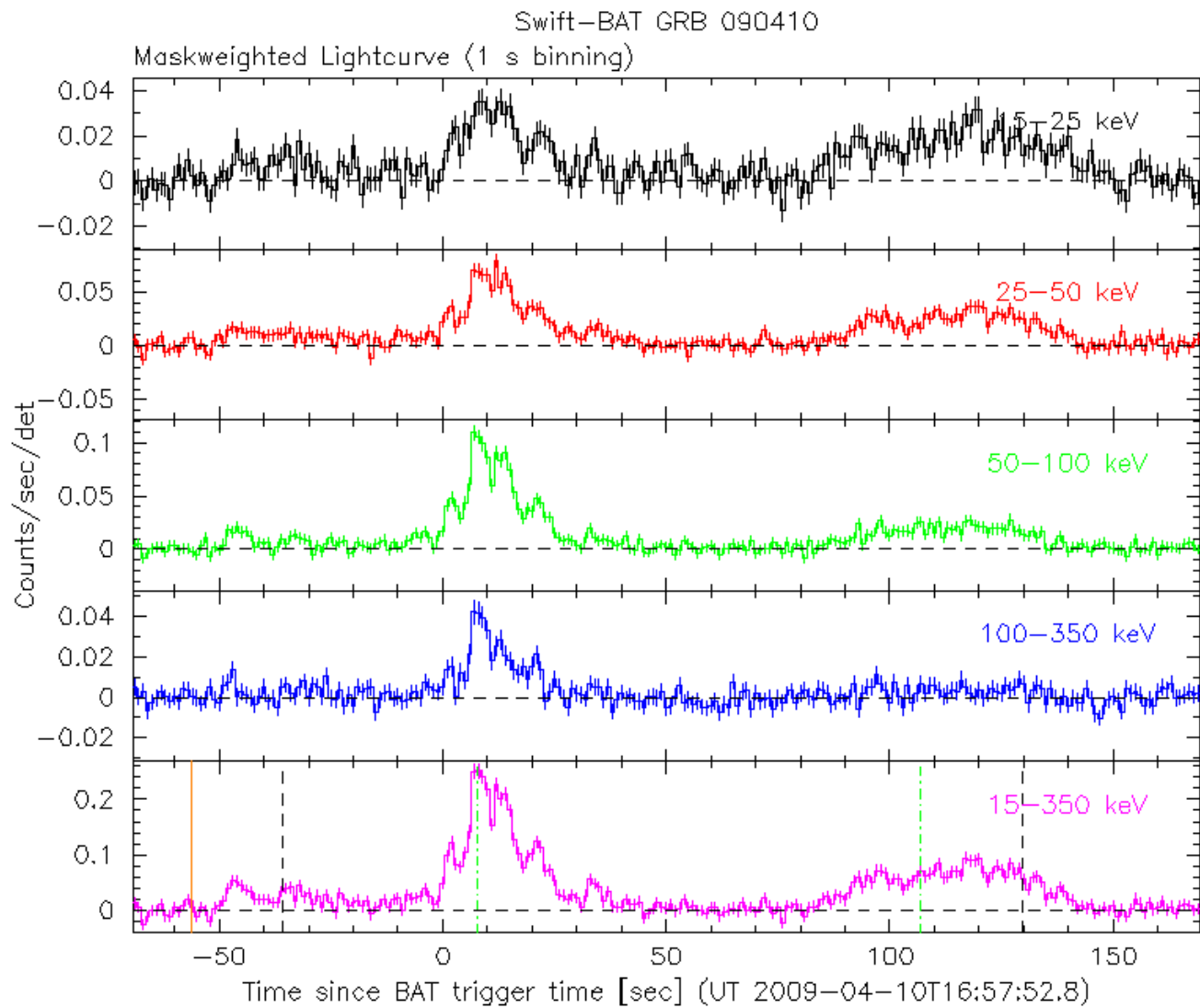


Figure 1: BAT Light curves of GRB 090410dvips -o .