Swift Observation of GRB 090129

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1 Introduction

BAT triggered on GRB 090129 at 21:07:15 UT (Trigger 341504) (Ziaeepour, et al., *GCN Circ.* 8861). This was a 0.256 sec rate-trigger with a significance of 24.12 on a mildly bright single-peak burst with $T_{90} = 17.5 \pm 2.7$ sec ($15 - 350$ keV). Swift didn't slew to this burst due to the Sun constraint, Sun distance = 41.63 deg, Sun angle = 2.9 hr (West of Sun). Our best position is from the BAT ground-analyzed data: RA($J2000$) = 269.105 deg ($17h56m25.1s$), Dec($J2000$) = -32.793 deg ($-32d47'34.8$") with an error of 1.0 arcmin (radius, 90% confidence). This burst has been also detected by INTEGRAL/SPI-ACS (V. Beckmann communication). No follow-up has been reported for this burst.

2 BAT Observation and Analysis

Using the data set from $T - 120$ to $T + 962$ sec, further analysis of BAT GRB 090129 has been performed by Swift team (Barthelmy et al., *GCN Circ.* 8862). The BAT ground-calculated position is RA($J2000$) = 269.105 deg ($17h56m25.1s$), Dec($J2000$) = -32.793 deg ($-32d47'34.8$") $\pm 1.$ arcmin, (radius, systematic and statistical, 90% containment). The partial coding was 89% (the offset angle was 18.14 deg).

The 1-sec binned mask-weighted light curves (Fig.1) show a single FRED peak with T_{90}(15-350keV) = 17.5 ± 2.7 sec (estimated error including systematics). There is also an overlapped softer peak at $\sim T_0 + 6$ sec. visible only in 2 softest bands.

The time-averaged spectrum from $T - 0.2$ to $T + 27.0$ sec is best fitted by a simple power law model. The photon index of the power-law is 1.888 ± 0.06 ($\chi^2 = 47.961$ for 57 d.o.f.). For this model the total fluence in the $15 - 150$ keV band is $(2.1 \pm 0.1) \times 10^{-6}$ergs cm^{-2} and the 1-sec peak flux measured from $T + 1.00$ sec in the $15 - 150$ keV band is 3.7 ± 0.2 ph cm^{-2} sec^{-1}.

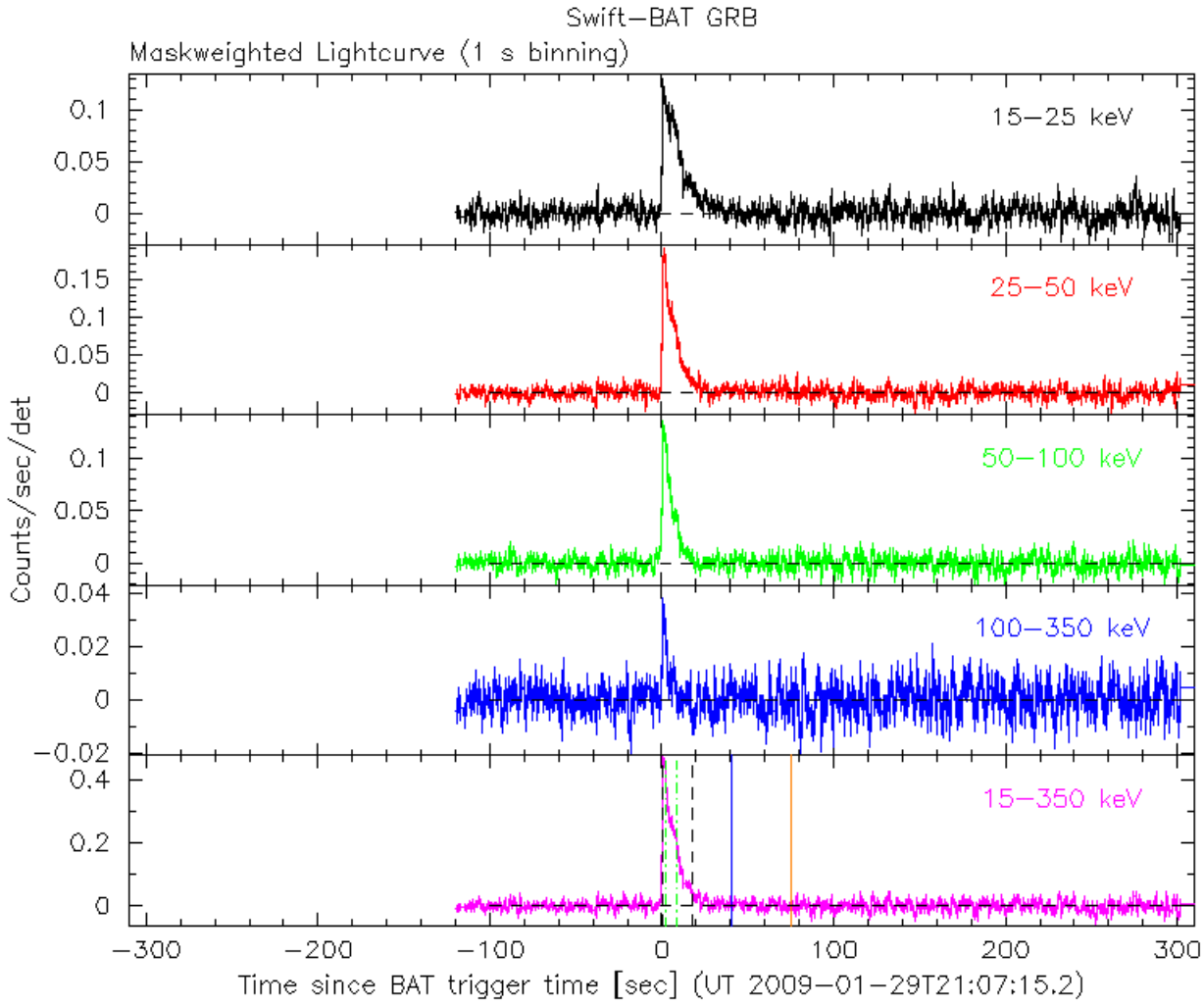

Figure 1: BAT light curve. The mask-weighted light curve in the 4 individual plus total energy bands. The units are counts/sec/illuminated-detector and T_0 is 21 : 07 : 15 UT.