Swift Observation of GRB 061122

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1 Introduction

IBAS on INTEGRAL triggered on the ∼20 sec duration GRB 061122 at 07:56:45 UT (Mereghetti *et al.*, *GCN Circ.* 5834). Konus-Wind triggered on GRB 061122 at 07:56:48.1 UT (Golenetskii *et al.*, *GCN Circ.* 5841). *Swift* executed a Target of Opportunity observation and began XRT follow-up observations at $T + 24.47$ ksec (Beardmore, *et al.*, *GCN Circ.* 5842), and UVOT at $T + 24.47s$ ksec (Oates, *et al.*, *GCN Circ.* 5846). Our best position is the XRT location RA($J2000$) = $20h15m19.88s$, Dec($J2000$) = $+15d31'02.9$" with an error of 3.6 arcsec (90% confidence, including boresight uncertainties). BAT did not observe the prompt event which was triggered by INTEGRAL (Mereghetti *et al.*, *GCN Circ.* 5834).

2 XRT Observations and Analysis

Using 27.5 ksec in Photon Counting mode of XRT data of GRB 061122, the refined XRT position is RA($J2000$) = $20h15m19.88s$, Dec($J2000$) = $15d31'02.9$" $\pm$ 3.6 arcsec (90% confidence, including boresight uncertainties). This position is within 1.16 arcsec of the initial XRT position, and 0.7 arcsec from the optical afterglow candidate, reported by Halpern *et al.*, *GCN Circ.* 5849. The XRT position is 18.8 arcsec from the INTEGRAL position given in Mereghetti *et al.*, *GCN Circ.* 5834.

The $0.3 - 10$ keV light curve (Fig.1) shows a decaying power law with index 1.3 ± 0.1 over the time interval $T + 24.5$ ksec to $T + 376$ ksec (with an exposure 53.1 ksec).

The X-ray spectrum over the time interval $T + 24.5$ to $T + 226.3$ ksec can be fit by an absorbed power-law with a photon index of 2.0 ± 0.2 and a column density $1.9 \pm 0.5 \times 10^{21}$ cm^{-2}. This is comparable to the Galactic column density in the direction of the source (1.5×10^{21} cm^{-2}). The average observed (unabsorbed) flux over $0.3 - 10$ keV for this spectrum (spanning a time of 24.5 ksec to 226.3 ksec after the trigger) is 1.1×10^{-12} (1.8×10^{-12}) ergs/cm^2/sec.

3 UVOT Observation and Analysis

The UVOT began observing the field of GRB 061122 at 14:47:46 UT, 24.74 ksec after the initial INTEGRAL trigger (Mereghetti et al., GCN 5834). No new source was detected within the XRT error circle (Beardmore, *et al.*, *GCN Circ.* 5842) in the co-added images in any filter down to 3-sigma magnitude. Upper limits are summarized in Table 1. These upper limits are not corrected for Galactic extinction E(B-V) = 0.183 mag (Schlegel et al. 1998).

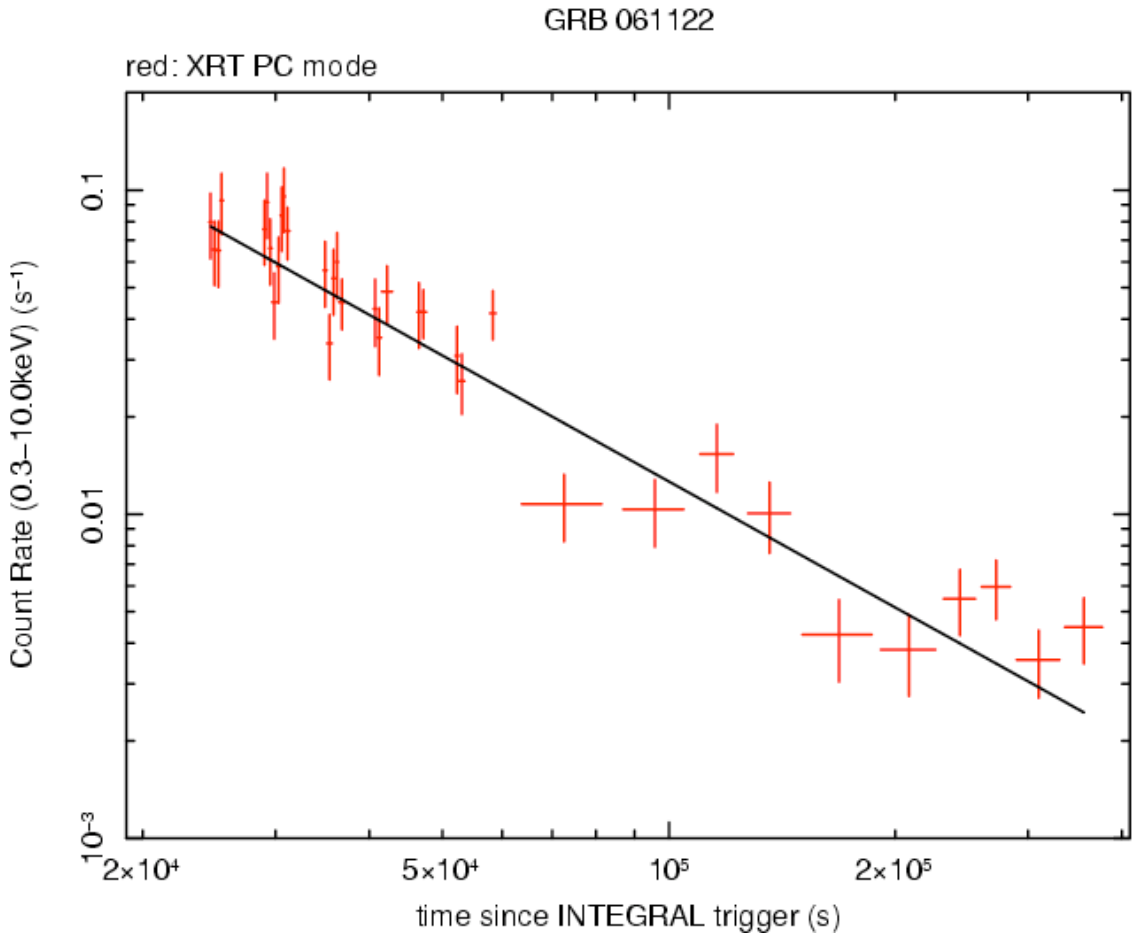

Figure 1: XRT Lightcurve. Counts/sec in the 0.3-10 keV band. The data are in Photon Counting mode (red). The approximate conversion is 1 count/sec = $\sim 4.6 \times 10^{-11}$ ergs/cm^2/sec.

Filter	Start	Stop	Exposure	3-Sigma UL
V	24658	58558	2645	20.69
B	25401	42918	936	20.62
U	25215	42901	1013	20.2
UVW1	25029	59414	1770	19.46
UVM2	24844	58920	2578	20.96
UVW2	24472	58124	2648	21.54

Table 1: Magnitude limits from UVOT observations