

## Final Swift Observations of INTEGRAL GRB 080414

*M. Stamatikos (GSFC/ORAU), T. Sakamoto (NASA/UMBC), A. P. Beardmore (U. Leicester), M. De Pasquale (MSSL/UCL), S.D. Barthelmy (GSFC), D. Burrows (PSU), P. Roming (PSU) and N. Gehrels (GSFC) for the Swift Team*

### 1 Revisions

Corrected typographical error of Swift TOO calendar date from April 14 to April 15, 2008<sup>1</sup>.

### 2 Introduction

At 22:33:32 UT of April 14, 2008 GRB 080414 was detected by IBAS in IBIS/ISGRI data lasting about 10 seconds with coordinates of RA, DEC (J2000) = 272.1342 deg, -18.8291 deg with an uncertainty of 2 arcmin (90% c.l.). Preliminary analysis resulted in a (1 second integrated) peak flux of about 1 photon/cm<sup>2</sup>/s and a fluence of  $3 \times 10^{-7}$  erg/cm<sup>2</sup> in the 20-200 keV energy band pass (Mereghetti et al., GCN Circ. 7618). Since this was an INTEGRAL trigger, there were no prompt Swift observations. However, at 14:15 UT on April 15, 2008 Swift performed a TOO observation of GRB 080414 at T+56.6 ks (De Pasquale et al., GCN Circ. 7628). Consequently, no BAT observations were made and we report on XRT and UVOT upper limits.

### 3 BAT Observation and Analysis

Since this was an INTEGRAL trigger, there were no prompt Swift observations. Consequently, no BAT observations were made.

### 4 XRT Observations and Analysis

No X-ray source was found in or near the IBAS error circle in a 3.9 ks exposure Swift/XRT Photon Counting mode image (taken from T+56.6 ks to T+85.5 ks) down to a  $3\sigma$  limiting 0.3-10 keV count rate of  $3 \times 10^{-3}$  count/s, as illustrated in Figure 1. Assuming a power-law spectrum of photon index 2 absorbed by the Galactic column density of  $1.16 \times 10^{22}$  cm<sup>-2</sup> in the direction of the burst, this corresponds to an observed 0.3 - 10 keV flux limit of  $1.9 \times 10^{-13}$  erg/cm<sup>2</sup>/s.

### 5 UVOT Observation and Analysis

UVOT observed the field and did not detect an UV/Optical afterglow in the IBAS error circle in all UVOT filters down to the following  $5\sigma$  upper limits, summarized in Table 1. These upper limits are not corrected for the very large Galactic extinction in the line of sight to GRB 080414, corresponding to a reddening of  $E(B-V) = 6.95$  mag (Schlegel et al., 1998, ApJS, 500, 525). We note that this value is rather uncertain in this direction. The photometry is based on the UVOT photometric system described in Poole et al. (2008, MNRAS, 383, 627).

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<sup>1</sup>We thank Petr Kubanek for pointing this out via email correspondence.

Filter	T <sub>Start</sub> (ks)	T <sub>Stop</sub> (ks)	Exposure (s)	Magnitude UL ( $5\sigma$ )
V	56.9	79.9	272	18.3
B	56.7	79.5	272	19.4
U	56.7	84.7	326	19.2
UVW1	56.6	84.7	1001	19.9
UVM2	57.0	80.1	564	19.4
UVW2	56.8	79.8	1085	19.9

Table 1: Magnitude limits from UVOT observations of GRB 080414.

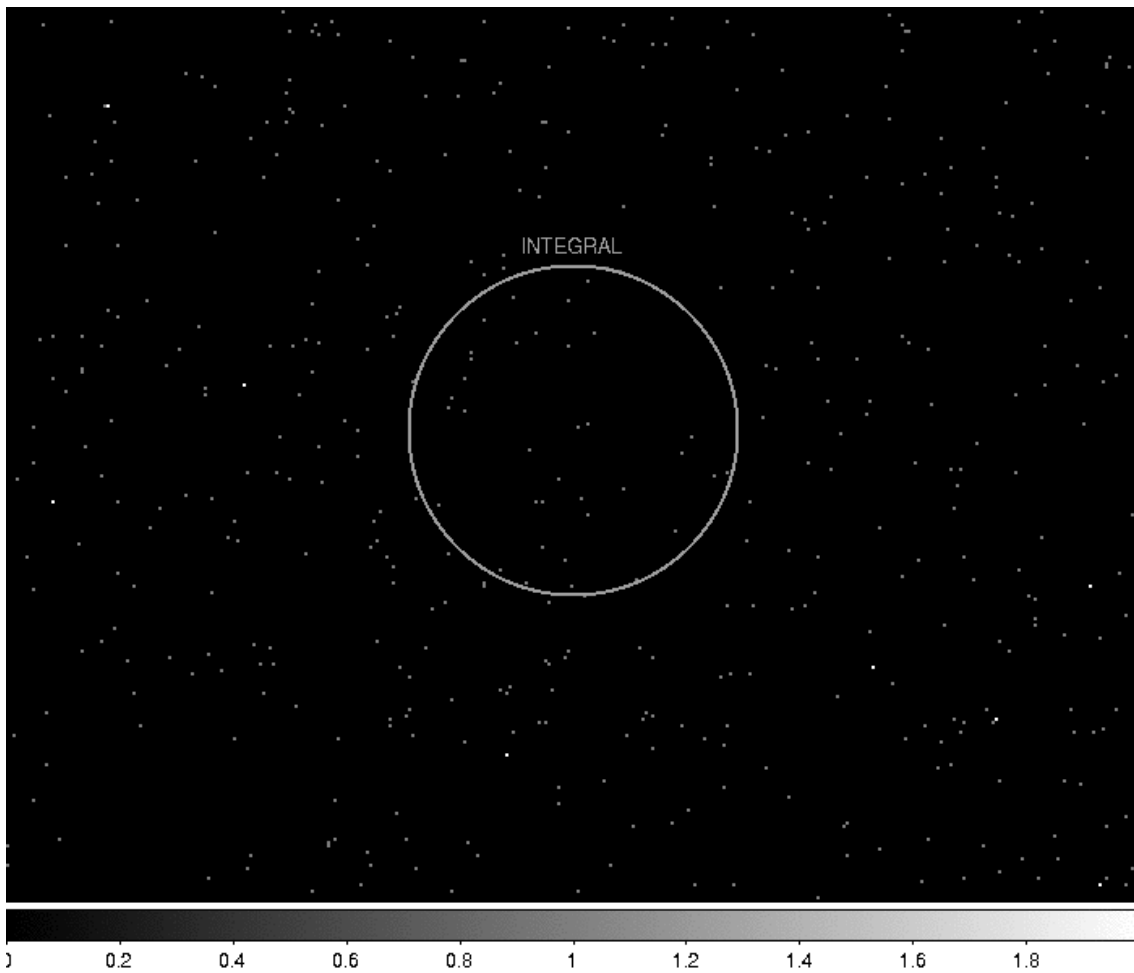


Figure 1: INTEGRAL error circle for GRB 080414 within XRT FOV in a 3.9 ks exposure Photon Counting mode image (taken from T+56.6 ks to T+85.5 ks) resulted in a  $3\sigma$  limiting 0.3-10 keV count rate of  $3 \times 10^{-3}$  count/s.