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Swift/BAT detection of a burst from SGR J1745-29

ATel #5124; *J. A. Kennea, D. N. Burrows (PSU), J. Cummings (GSFC), C. Kouveliotou (MSFC), N. Degenaar, M. T. Reynolds, J. M. Miller (Michigan), R Wijnands (Amsterdam)*
on 12 Jun 2013; 01:31 UTCredential Certification: *Jamie A. Kennea (kennea@astro.psu.edu)*

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Referred to by ATel #: 5254



At 11:17:26 UT on June 7th, 2013 Swift/BAT triggered on a burst from the region near Sgr A*, which contains the currently active magnetar SGR J1745-29 (Kennea et al. 2013; Mori et al. 2013). The initial onboard data showed a short duration single soft peak < 0.32 s in duration (Barthelmy et al., GCN #14805). We have analyzed the downlinked BAT data and find a refined position of RA/Dec = 266.4340, -28.9876 with an estimated error of 2.6 arc-min. This position lies 1.5 arc-sec from the best position of SGR J1745-29 provided by Chandra (Rea et al., ATEL #5032). This is the second SGR burst from this source since it was first detected by XRT on April 24th, 2013 (Degenaar et al., ATEL #5006). The first BAT burst was detected on April 25th (Kennea et al., ATEL #5009), ~42 days earlier.

The spectrum of the latest BAT burst can be well fit by a blackbody model with $kT = 5.4 \pm 0.7$ keV, and a fluence of $4.3 \pm 1.2 \times 10^{-9}$ erg/cm² (15-150 keV). In comparison the earlier BAT burst had a temperature of 9.2 ± 0.8 keV, and a 15-150 keV fluence of $7.8 \pm 1.8 \times 10^{-9}$ erg/cm² (Kennea et al., 2013), making this burst slightly softer/fainter than the previous burst.

A target-of-opportunity observation in response to this burst detection was initiated, and 1ks of Swift/XRT data was collected starting 14:14 UT on June 7th, 2013, approximately 3 hours after the burst. The PC mode spectrum of SGR J1745-29 can be fit with an absorbed black-body model with $kT_{\text{BB}} = 1.1 \pm 0.2$ keV and an absorption corrected flux of $3.5 \pm 0.7 \times 10^{-11}$ erg/s/cm² (0.3-10 keV). Since initial detection, SGR J1745-29 has been slowly fading (e.g. see <http://www.swift-sgra.com>), and this observation shows a slightly elevated flux compared to the previous observation ($2.8 \pm 0.6 \times 10^{-11}$ erg/s/cm²), although given the errors on this flux and the variability seen in the light-curve of SGR J1745-29, we cannot conclusively state that this elevated flux is as a result of the SGR burst.

Observations of SGR J1745-29 by Swift are on-going.

References:

Kennea, Burrows, Kouveliotou et al., 2013, ApJL, 770, 24
Mori, Gotthelf, Zhang et al., 2013, ApJL, 770, 23

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