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Publication date

2013

Document Version

Final published version

Published in

The astronomer's telegram

[Link to publication](#)

Citation for published version (APA):

Bahramian, A., Heinke, C. O., Sivakoff, G. R., Wijnands, R., Altamirano, D., Homan, J., Pooley, D., & Gladstone, J. C. (2013). No indication of X-ray activity in Terzan 1 from a short Swift/XRT observation. *The astronomer's telegram*, 5116.
<http://www.astronomerstelegam.org/?read=5116>

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No indication of X-ray activity in Terzan 1 from a short Swift/XRT observation

ATel #5116; *Arash Bahramian, Craig O. Heinke, Gregory R. Sivakoff, Rudy Wijnands, Diego Altamirano, Jeroen Homan, David Pooley, J. C. Gladstone*
on 7 Jun 2013; 16:01 UT
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Subjects: X-ray, Transient

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- 5116** No indication of X-ray activity in Terzan 1 from a short Swift/XRT observation
- 5096** MAXI/GSC detection of X-ray enhancement toward the globular cluster Terzan 1

Following the report of enhanced X-ray activity towards the direction of Terzan 1 by MAXI from May 19--30 (Atel #5096), we performed an observation with Swift/XRT on June 4th (Obs. ID: 00032852001) and found no evidence of X-ray activity in the vicinity of Terzan 1. The exposure of this observation after standard processing was 35 seconds, though the unfiltered data's exposure time is 897 seconds. Data quality was lost due to an issues in the tracking of the telescope. In the filtered exposure, there are 21 counts in the field of view and 0 counts within 1.4 arcminutes of Terzan 1 (the radius considered by Cackett et al. 2006, MNRAS, 369, 407, for identifying X-ray sources associated with Terzan 1). At 95% confidence, then, the countrate from Terzan 1 is below 0.09 counts/s. Using a distance of 6.7 kpc (Harris 1996, AJ, 112, 1487; 2010 edition) to Terzan 1 and an absorbed ($N_H=1.36e22 \text{ cm}^{-2}$) powerlaw of photon index 2, this translates to an upper limit of $L_X[0.5-10 \text{ keV}] < 6e34 \text{ erg/s}$. Atel #5096 reported $L_X[4-10 \text{ keV}] \sim 6e35 \text{ ergs/s}$ (for a distance of 5.2 kpc), which should (for the same assumed spectrum) predict a count rate of $\sim 5 \text{ cts/s}$ in Swift/XRT. The source MAXI J1735-304 might be out of our observation FOV, as the reported MAXI position of this source has an uncertainty of 0.3 degrees. It is also possible that the outburst declined before our Swift/XRT observation, or that we have observed during a dip or eclipse. We thank the Swift team for rapidly scheduling our observation.

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