Radio Non-Detection of the New Swift Bulge Survey Transient, Swift J175233.9-290952


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Radio Non-Detection of the New Swift Bulge Survey Transient, Swift J175233.9-290952

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We report follow-up VLA radio observations of the new X-ray transient, Swift J175233.9-290952, discovered with the Swift Bulge Survey (ATel # 10355). Our VLA observations occurred on 2017 May 13, with scans on source between 10:13:06-11:12:54 UTC (MJD=57886.43-57886.47), in X band (8-12 GHz). The array was in the D configuration during our observations.

We do not significantly detect a radio source (in the combined base-band data at 10 GHz) within the X-ray error circle reported in ATel # 10355; we estimate a 3 sigma upper limit on the source flux density of ~15 microJy/bm. This upper limit is equivalent to a radio luminosity ($L_r=nu L_nu$) of ~ 1.8$\times$10$^26$ (d/8kpc)$^2$ erg/s at 10 GHz.

To make a preliminary classification of the source, we place this object on the $L_r-L_x$ plane (see figure here; the red line displays the location of the source at various distances from 2 kpc to 12 kpc), by considering the radio luminosity upper limit at 5 GHz (assuming a flat spectrum) of 8.5$\times$10$^25$ (d/8 kpc)$^2$ erg/s, and the 1.0-10 keV X-ray luminosity of 1.4$\times$10$^{34}$ (d/8 kpc)$^2$ erg/s (from the closest Swift observation on May 10th). Based on these measurements, and considering potential distances of 2 - 12 kpc, Swift J175233.9-290952 is not a typical (radio-loud) black hole X-ray binary. We cannot distinguish between the possibilities of a radio-quiet black hole X-ray binary, tMSP, AMXP, or a non-pulsating neutron star X-ray binary.

We thank the NRAO staff for rapidly scheduling our observations.
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