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The black hole candidate IGR J17091-3624 is still active

ATel #4773; *D. Altamirano (UvA), R. Wijnands (UvA), J. Rodriguez (CEA Saclay), S. Corbel (CEA Saclay & Univ. Paris Diderot), T. Belloni (INAF)*

on 31 Jan 2013; 09:37 UT

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Subjects: X-ray, Black Hole, Transient

Referred to by ATel #: [5112](#)



In February 2011 the black hole candidate IGR J17091-3624 went into outburst (detected by Swift/BAT, see ATEL #[3144](#)). During this outburst IGR J17091-3624 exhibited strong and highly-structured X-ray variability (e.g. Altamirano et al. 2011, ApJL, 742, 17, and references therein) which so far had only been observed from the very-bright black hole X-ray transient GRS 1915+105.

This 2011 outburst of IGR J17091-3624 has been studied using many multi-wavelength observations (ATEL #[3148](#), #[3150](#), #[3159](#), #[3167](#), #[3168](#), #[3179](#), #[3203](#), #[3225](#), #[3229](#), #[3230](#), #[3232](#), #[3266](#), #[3299](#), #[3913](#), #[3916](#), #[4173](#), #[4282](#), #[4283](#), #[4360](#)) except during the December-January periods, when sun constraints do not allow further observations to be performed. Since mid-January 2013 IGR J17091-3624 appears to be undetected by the daily Swift/BAT monitoring observations:

<http://swift.gsfc.nasa.gov/docs/swift/results/transients/weak/IGRJ17091-3624/>

Unfortunately, MAXI cannot resolve IGR J17091-624 given the nearby bright X-ray source GX 349+2 (T. Mihara, private communication).

To determine the current level of X-ray activity of IGR J17091-3624, we acquired a ~1000 seconds Swift/XRT observation on 2013-01-27 07:42:00 UT. The observation was done in PC mode. In the image a source can clearly be detected at coordinates consistent with IGR J17091-3624. From the Swift/XRT image a set of bright concentric rings can also be seen, one of which lies very close to IGR J17091-3624. These rings are most probably due to the bright nearby source GX 349+2.

A spectrum of the January 2013 observation was extracted following Evans et al. (2009, MNRAS, 397, 1177) and taking into account possible contamination of GX 349+2. Preliminary results show that the 0.5-10 keV source spectrum can be well fitted with an absorbed ($N_{\text{H}} \sim 1.2e22 \text{ cm}^{-2}$) power law with a photon index of ~ 1.6 , leading to an unabsorbed 0.5-10 keV ($2.0-10 \text{ keV}$) flux of $\sim 4.6e-11 \text{ ergs/cm}^2/\text{s}$ ($\sim 2.8e-11 \text{ ergs/cm}^2/\text{s}$). These fluxes imply a luminosity of $\sim 3.5e35 \text{ ergs/s}$ ($\sim 2.1e35 \text{ ergs/s}$) or $2.2e36 \text{ ergs/s}$ ($\sim 1.3e36 \text{ ergs/s}$), assuming distances of 8 kpc and 20 kpc, respectively. Errors to the fit values and the fluxes are not well constrained due to the low statistics of the spectrum and the possible contamination due to GX 349+2. In any case, our flux measurements are more than two orders of magnitude higher than the averaged $12e-14 \text{ ergs/cm}^2/\text{s}$ reported by Wijnands, Yang, and Altamirano (2012, MNRAS, 422, 91) during

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XMM-Newton observations of IGR J17091-3624 during quiescence. Therefore we conclude that IGR J17091-3624 is still active.

We thank the Swift/Team for scheduling our observation.

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