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The black hole candidate IGR J17091-3624 is still active

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*on **6 Feb 2012; 15:18 UT***
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Referred to by ATel #: 3916, 4282, 4773

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In February 2011 it was reported that the black hole candidate IGR J17091--3624 exhibited a new outburst (using Swift/BAT, see Atel #3144). During this outburst IGR J17091-3624 was followed up by multi-wavelength observations (ATel #3148, #3150, #3159, #3167, #3168, #3179, #3203, #3225, #3229, #3230, #3232, #3266, #3299).

After IGR J17091-3624 underwent the typical hard-to-soft state transition (e.g. ATel #3179), it was not detected any more by Swift/BAT:

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

(and Rodriguez et al. 2011, A&A, 533, 4). Unfortunately, MAXI cannot resolve IGR J17091-624 given the nearby bright X-ray source GX 349+2 (T. Mihara, private communication).

This particular outburst turned out to be very interesting because the source suddenly exhibited strong and highly-structured X-ray variability which so far had only been observed from the very-bright black hole X-ray transient GRS 1915+105 (e.g. Altamirano et al. 2011, ApJL, 742, 17). Swift and RXTE monitored the source during its 2011 outburst until end November - beginning of December 2011, when no more observations were possible due to visibility constraints.

To determine the current X-ray level of activity of IGR J17091-3624, we acquired several Swift/XRT observations: on Jan 26th and Jan 31st 2012 IGR J17091-3624 was clearly detected, at a 0.5-10 keV count rate ~15+/-2 cts/sec. This is about a factor of ~2.5 lower than when it was last seen in 2011.

Spectra of the 2012 observations were extracted following Evans et al. (2009, MNRAS, 397, 1177). The 0.5-10 keV source spectrum is well fitted with an absorbed (Nh~1.35) power law of index ~2.6, leading to an unabsorbed 0.5-10 keV (2.-10 keV) flux of 1.96e-09 ergs/cm2/s (6.04e-10 ergs/cm2/s), implying a luminosity of 1.5e37 erg/s (4.6e36 erg/s) or 9.4e37 erg/s (2.9e37 erg/s) for 8 kpc and 20 kpc, respectively.

Aperiodic timing analysis of the Swift/XRT data does not reveal any significant feature in the power spectrum. This, together with the rather soft energy spectra we detect might imply that IGR J17091-3624 is in a black hole ``normal soft state'' and therefore could undergo the soft-to-hard transition soon. However, given the similarities with GRS 1915+105, this could also be an

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3266 Multiple evolving peaks in the power density spectrum and the spectral transition were detected in IGR J17091-3624

additional variability class to those reported for IGR J17091-3624 so far (e.g. Altamirano et al. 2011, ApJL, 742, 17).

IGR J17091-3624 will be monitored with Swift/RXTE twice a week during February. Followup observations at other wavelengths are encourage.

We thank the Swift/Team for scheduling our observations.

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