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## IGR J18245-2452 is a new transient located in the core of the globular cluster M28

ATel #4927; *C. O. Heinke, A. Bahramian (U. Alberta), R. Wijnands, D. Altamirano (U. Amsterdam)*

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Eckert et al. (Atel #4925) report a new INTEGRAL ISGRI transient, IGR J18245-2452, consistent with the location of the globular cluster M28, but with a large (1.4', 90% conf) error circle. We used the UK Swift Science Centre XRT products tool, and our own processing, to analyze a Swift observation of IGR J18245-2452 (PI Ferrigno), which started on March 29, 2013 and lasted 1977 seconds. The transient is clearly detected and heavily piled-up, but the PSF is symmetrical, allowing a reliable centroid position. The centroid position is (J2000) 18:24:32.20,-24:52:05.5, with error radius 3.5" (at 90% confidence), inside the core of M28. We note that this position is inconsistent with the one known quiescent LMXB in the cluster, at position 18:24:32.821,-24:52:08.26 (Becker et al. 2003, ApJ, 594, 798), and is only consistent (within 90% confidence) with one source from Becker et al. (2003), their source 22. Note that source 22 is probably a combination of X-ray emission from millisecond pulsar L and another source (see Bogdanov et al. 2011, ApJ, 730, 81). It is quite possible that the true quiescent counterpart to IGR J18245-2452 is fainter than Becker et al.'s detection limit.

The Swift XRT observation shows substantial variability, by over a factor of two within less than 100 seconds. Spectral fitting (excluding 17 arcseconds around the central piled-up core) gives  $N_H = 4.4 \pm 0.4 \times 10^{21} \text{ cm}^{-2}$  (slightly higher than the cluster  $N_H$  of  $2.4 \times 10^{21}$ ), photon index  $= 1.41 \pm 0.07$ , and 0.5-10 keV (unabsorbed) flux of  $5.7 \pm 0.2 \times 10^{-10} \text{ erg/cm}^2/\text{s}$ . For M28's distance of 5.5 kpc (Harris, 1996, AJ, 112, 1487; 2010 edition), this gives an inferred 0.5-10 keV luminosity of  $2.1 \pm 0.1 \times 10^{36} \text{ erg/s}$ .

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