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Detection of the NIR counterpart of the accreting millisecond pulsar IGR J17591-2342

ATel #11970; *A. W. Shaw (University of Alberta), N. Degenaar (Univeristy of Amsterdam), C. O. Heinke (University of Alberta)*

on 19 Aug 2018; 19:14 UT

*Distributed as an Instant Email Notice Transients
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Subjects: Infra-Red, Neutron Star, Transient, Pulsar

Referred to by ATel #: [12004](#)

We report on near-infrared (NIR) follow-up of the new accreting millisecond X-ray pulsar IGR J17591-2342, discovered by INTEGRAL and localized by Swift and ATCA (ATel #[11941](#), #[11942](#), #[11954](#)).

We obtained imaging in the Ks and H bands, using the High Acuity Wide-field K-Band Imager (HAWK-I) mounted on UT4 of the Very Large Telescope on Cerro Paranal, Chile. Conditions were excellent, with seeing <1". We obtained 7 exposures of 195s in Ks, with each co-added exposure consisting of 13 dithered 15s exposures. In H we obtained 7 exposures of 65s, with each co-add consisting of 13 dithered 5s exposures. Data were reduced with ESO's reflex pipeline and we extract photometry from the pipeline products.

We detect a source at RA (J2000) =17:59:02.87, Dec (J2000) = -23:43:08.2, with magnitudes of H=19.56 +/- 0.07 and Ks=18.37 +/- 0.07. The source position is completely consistent with the ATCA position reported by Russell et. al. (ATel #[11954](#)) and the typical astrometric uncertainty in the HAWK-I images is ~0.03". We therefore propose that this is the NIR counterpart of the pulsar.

Though the counterpart is faint, follow-up observations are encouraged, particularly NIR spectroscopy.

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