Swift/UVOT follow-up observation of the blue optical transient MASTER075353.88+174907.6

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Swift/UVOT follow-up observation of the blue optical transient MASTER075353.88+174907.6

ATel #10922; ***A. S. Parikh (U. of Amsterdam), R. Wijnands (U. of Amsterdam)***
*on **2 Nov 2017; 15:18 UT***
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Subjects: Optical, Ultra-Violet, X-ray, Nova, Transient

On 2017 Oct 31 the MASTER-Net project detected a very blue optical transient MASTER075353.88+174907.6 (ATel #10915) that had increased by >4.4 mag in the blue band compared to its quiescent level as determined from observations taken as part of the Sloan survey. We observed the source (for a total of ~3 ksec) using the UVOT aboard the Swift observatory with all six optical and UV filters. The source is clearly detected in all the filters. The magnitudes in the Swift/UVOT Vega photometric system (Poole et al. 2008) from the various filters, along with the 1-sigma errors, are shown below.

Filter	Mag
V	19.2 +/- 0.7
B	19.2 +/- 0.2
U	18.2 +/- 0.1
W1	17.8 +/- 0.1
M2	17.6 +/- 0.1
W2	17.8 +/- 0.1

Clearly the source is brighter in the UV compared to in the optical . In the B band the source has decreased by ~0.6 mag compared to its value yesterday (18.6 mag; ATel #10915).

The position of our source is consistent with a GALEX source (see also ATel #10915) which had a NUV magnitude of 22.9. This NUV filter is most similar to the UVOT M2 filter, indicating that our source is now ~5 mag brighter than during the GALEX observation that likely observed the source in quiescence.

We also examined the data obtained using the the Swift/XRT and found that our source was undetected in the X-rays. No photons were detected in a total exposure time of ~3 ksec. The X-ray upper limit (90% confidence level; using the prescription by Gehrels 1986) for the count rate is <7.8e-4 c/s. We simulated a spectrum by assuming a photon index of 2 and a Galactic Nh towards the source of 3.8e20 /cm^2 and determined an X-ray upper limit of <2e-14 erg/cm/2 (unabsorbed; 0.5-10 keV).

This X-ray non-detection in combination with the blue optical/UV broad band spectral shape indicates that MASTER075353.88+174907.6 may be a dwarf nova outburst of an accreting white dwarf.

We thank the Swift Acting PI Brad Cenko and the Swift team for the rapid execution of this ToO observation.

Poole T. S., et al. 2008, MNRAS, 383, 627
Gehrels N., 1986, ApJ, 303, 336

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