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New Algol-type Binary System in Cetus

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Star Name:	USNO-B1.0 0793-0023471		
Coordinates (J2000):	02 24 27.85, -10 40 35.2		
Variability type:	EA;	**Limits, System:**	15.443 - 16.130 (Rc);
Period:	1.0455 d;	**Epoch(min):**	JD 2455106.8463 (HJD)

Remarks:

During observations of an 88' × 59' field in Cetus, centred at $\alpha = 02^h24^m25^s$, $\delta = -10°41'12"$, on the remotely controlled astrophysical refractor AP-180 of the Tzec Maun observatory, we discovered a new Algol-type binary star USNO-B1.0 0793-0023471. We used C-Munipack software. All observations were unfiltered; the maximum quantum efficiency of the SBIG STL-11000 CCD camera is close to the Rc photometric band. Our observations cover 14 observing runs in the time interval from JD 2455058 (August 15, 2009) to JD 2455121 (October 16, 2009). We used USNO B1.0 0792-0023465 (Rc = 14.973), found constant, as the reference star for our photometrical measurements. We searched for the period of the new binary using the Lafler–Kinman method (Lafler & Kinman 1965) in thePeranso software. The star exhibits two minima of nearly equal brightness: MinI = 16.130, MinII = 16.108. The eclipse duration is 10.6%. To find a more precise period, we used Catalina Survey observations (Drake et al., 2009), which span 2739 nights of observations. We also measured individual minima:

HJD	err	mag	Min type
2455106.8463	0.0029	16.130	I
2455117.8222	0.0026	16.105	II
2455119.9158	0.0027	16.112	II

The new variable star had been registered in VSX catalogue as VSX J022427.8-104034.

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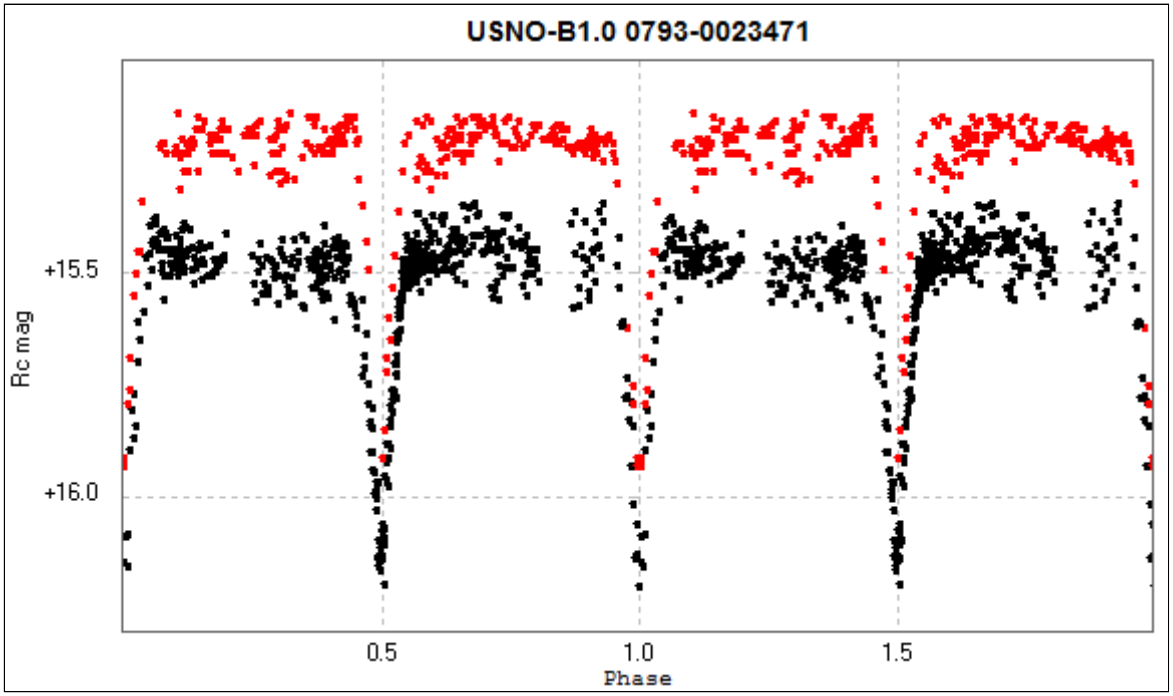
service, operated at CDS, Strasbourg, France and the International Variable Star Index (VSX) operated by the AAVSO.

References:

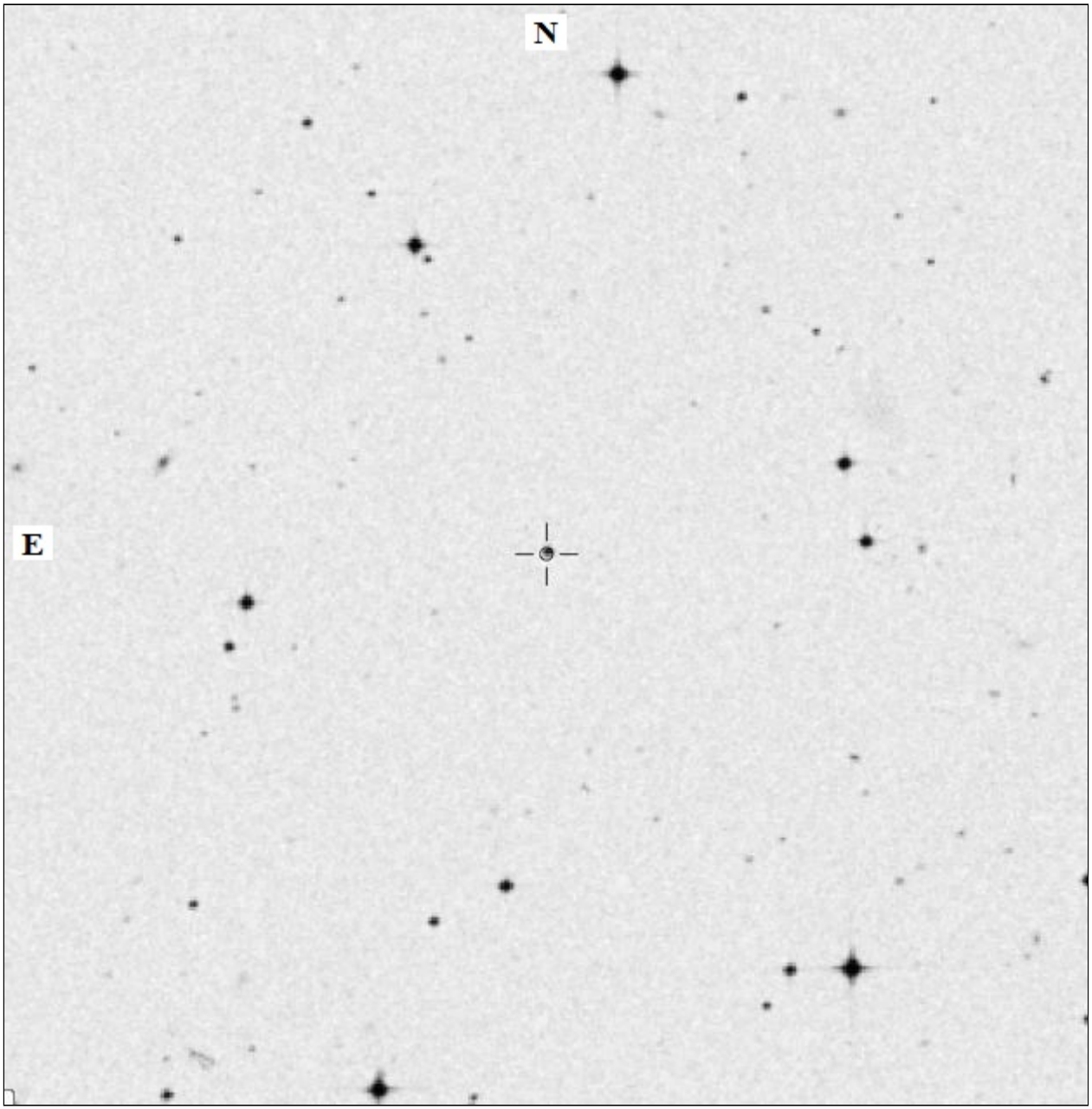
Drake, A.J., Djorgovski, S.G., Mahabal, A., et al., 2009, Astrophys. J., 696, 870
Lafler, J., Kinman, T.D., 1965, Astrophys. J. Suppl., 11, 216

Light Curve



Red data points: AP-180 observations; black data points: Catalina observations.

Finding Chart



10'× 10' chart

Data Source

1. usno-b1.0_0793-0023471.txt