

Discovery of five W UMa systems

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#	Name	Other	Coord (J2000)	Type	Max	Min	System	Period	Epoch (JD)	type	Sp	Comment	L.Curve	Find.Chart	Data
1		USNO-A2.0 1425-02035807	01 30 15.4, +58 27 32.2	EW	16.5	16.77	R	0.31618	2458081.43803	min		Comm. 1	LC_1425-02035807.jpg	FoV_1425-02035807.jpg	D1425-02035807.txt
2		USNO-A2.0 0975-15174250	19 31 52.4, +09 05 47.4	EW	16.7	17.04	R	0.32745	2458336.44482	min		Comm. 2	LC_0975-15174250.jpg	FoV_0975-15174250.jpg	D0975-15174250.txt
3		USNO-A2.0 0975-15180095	19 31 56.1, +09 03 46.2	EW	17.6	17.83	R	0.42667	2458307.42384	min		Comm. 3	LC_0975-15180095.jpg	FoV_0975-15180095.jpg	D0975-15180095.txt
4		USNO-A2.0 0975-15180948	19 31 56.6, +09 09 46.9	EW	17.6	18.12	R	0.28375	2458317.54258	min		Comm. 4	LC_0975-15180948.jpg	FoV_0975-15180948.jpg	D0975-15180948.txt
5		USNO-A2.0 1425-11417028	21 00 03.1, +54 34 14.3	EW	17.9	18.54	R	0.41156	2458720.34611	min		Comm. 5	LC_1425-11417028.jpg	FoV_1425-11417028.jpg	D1425-11417028.txt

Comments:

1. The system USNO-A2.0 1425-02035807 (indicated as V in the finding chart) is located in the Field of View of the planetary nebula Sh2-188. USNO-A2.0 1425-02037041 and USNO-A2.0 1425-02034268 were used as Comparison (C) and Check (K) stars, respectively, and they are also indicated in the finding chart. $\text{MaxI} - \text{MinI} = -0.27$ mag and $\text{MaxI} - \text{MinII} = -0.25$ mag in R-filter. The maximum magnitude in R-filter is taken from the USNO-A2.0 Catalogue (Monet et al. 1998). Other cross identifications for the variable: NOMAD1 1484-0055235, 2MASS J01301542+5827315.
2. USNO-A2.0 0975-15174250 (indicated as V in the finding chart) is located in the Field of View of the planetary nebula NGC 6804. USNO-A2.0 0975-15178006 and USNO-A2.0 0975-15178404 were used as Comparison (C) and Check (K) stars, respectively, and they are also indicated in the finding chart. $\text{MaxI} - \text{MinI} = -0.34$ mag and $\text{MaxI} - \text{MinII} = -0.29$ mag in R-filter. The maximum magnitude in R-filter is taken from the USNO-A2.0 Catalogue (Monet et al. 1998). Other cross identifications for the variable: NOMAD1 0990-0513167, USNO-B1.0 0990-0466422.
3. The system USNO-A2.0 0975-15180095 (indicated as V in the finding chart) is located in the Field of View of the planetary nebula NGC 6804. USNO-A2.0 0975-15178006 and USNO-A2.0 0975-15178404 were used as Comparison (C) and Check (K) stars, respectively, and they are also indicated in the finding chart. $\text{MaxI} - \text{MinI} = -0.23$ mag and $\text{MaxI} - \text{MinII} = -0.18$ mag in R-filter. The maximum magnitude in R-filter is taken from the USNO-A2.0 Catalogue (Monet et al. 1998). Other cross identifications for the variable: NOMAD1 0990-0513450, 2MASS J19315602+0903459.
4. USNO-A2.0 0975-15180948 (indicated as V in the finding chart) is located in the Field of View of the planetary nebula NGC 6804. USNO-A2.0 0975-15178845 and USNO-A2.0 0975-15179318 were used as Comparison (C) and Check (K) stars, respectively, and they are also indicated in the finding chart. $\text{MaxI} - \text{MinI} = -0.52$ mag and $\text{MaxI} - \text{MinII} = -0.46$ mag in R-filter. The maximum magnitude in R-filter is taken from the USNO-A2.0 Catalogue (Monet et al. 1998). Other cross identifications for the variable: 2MASS J19315662+0909464, NOMAD1 0991-0512174.
5. The system USNO-A2.0 1425-11417028 (indicated as V in the finding chart) is located in the Field of View of the planetary nebula NGC 7008. USNO-A2.0 1425-11416046 and USNO-A2.0 1425-11415876 were used as Comparison (C) and Check (K) stars, respectively, and they are also indicated in the finding chart. $\text{MaxI} - \text{MinI} = -0.64$ mag and $\text{MaxI} - \text{MinII} = -0.63$ mag in R-filter. The maximum magnitude in R-filter is taken from the USNO-A2.0 Catalogue (Monet et al. 1998). Other cross identifications for the variable: 2MASS J21000311+5434138.

Remarks:

In the present study, we present the first photometric elements of five newly discovered W UMa-type eclipsing binaries. Their variability was detected for the first time as a by-product during observations of other targets. The observations were carried out at the Kryoneri Observatory of the National Observatory of Athens, Corinthia, Greece between November 2017 – September 2019 using a 1.2-m prime focus telescope ($f/3$) equipped with the APOGEE ASPEN CG47 CCD camera and the red (Bessell) photometric filter. The observations of USNO-A2.0 1425-02035807 in 2017 were made with the same telescope and camera set-up, but without filters. The system USNO-A2.0 1425-11417028 was also observed in 2019 with the same telescope and the Andor sCMOS Zyla 5.5 camera equipped with the red (Bessell) photometric filter. Differential magnitudes were obtained for all targets using the

software Muniwin v.1.1.29 (Hroch 1998).

References:

Hroch, F., 1998, Proceedings of the 29th Conference on Variable Star Research, 30

Monet, D., Bird, A., Canzian, B., et al., 1998, USNO-A2.0, A Catalogue of Astrometric Standards (U.S. Naval Observatory, Washington, DC), Centre de Données Astronomiques de Strasbourg, I/252