Discovery of five new eclipsing systems of W UMa type

A. Liakos

Institute for Astronomy, Astrophysics, Space Applications and Remote Sensing, National Observatory of Athens, Metaxa & Vas. Pavlou St., Penteli, Athens, Greece

#	Name	Other	Coord (J2000)	Type	Max	Min	System	Period	Epoch (JD)	type	Sp	Comment	L.Curve	Find.Chart	Data
1		USNO-A2.0 1350-03467786	03 27 45.61, +45 17 20.17	EW	14.5	14.77	R	0.39180	2458425.48706	min		Comm. 1	LC_USNO-A2.0_1350-03467786.jpg	FoV_USNO-A2.0_1350-03467786.jpg	A2.0_1350-03467786.txt
2		USNO-A2.0 1275-02644421	03 45 53.35, +37 45 09.70	EW	15.6	15.70	R	0.29969	2458376.47059	min		Comm. 2	LC_USNO-A2.0_1275-02644421.jpg	FoV_USNO-A2.0_1275-02644421.jpg	A2.0_1275-02644421.txt
3		USNO-A2.0 0900-14578525	19 18 48.08, +06 37 56.63	EW	17.3	17.65	R	0.67246	2458317.50558	min		Comm. 3	LC_USNO-A2.0_0900-14578525.jpg	FoV_USNO-A2.0_0900-14578525.jpg	A2.0_0900-14578525.txt
4		USNO-A2.0 1125-16127402	20 29 12.19, +24 36 47.80	EW	14.8	15.05	R	0.30718	2455392.56492	min		Comm. 4	LC_USNO-A2.0_1125-16127402.jpg	FoV_USNO-A2.0_1125-16127402.jpg	A2.0_1125-16127402.txt
5		USNO-A2.0 1425-15515944	23 45 05.41, +57 00 51.24	EW	17.5	18.03	R	0.29917	2458081.27500	min		Comm. 5	LC_USNO-A2.0_1425-15515944.jpg	FoV_USNO-A2.0_1425-15515944.jpg	A2.0_1425-15515944.txt

Comments:

1. The system USNO-A2.0 1350-03467786 (indicated as V in the finding chart) is located in the Field of View of the planetary nebula HDW 3. USNO-A2.0 1350-03466399 and USNO-A2.0 1350-03461726 were used as Comparison (C) and Check (K) stars, respectively, and they are also indicated in the finding chart. MaxI–MinI ~ MaxI–MinII ~ –0.27 mag in R-filter. The maximum magnitude in R-filter is given in the USNO-A2.0 Catalog (Monet et al. 1998). Other cross identifications for the variable: NOMAD1 1352-0077531. The observations were carried out at the Kryoneri Observatory of the National Observatory of Athens, Corinthia, Greece between September and December 2018 using a 1.2–m prime focus telescope (f/3) equipped with the APOGEE ASPEN CG47 CCD camera and the R (Bessell) photometric filter.

2. The system USNO-A2.0 1275-02644421 (indicated as V in the finding chart) is located in the Field of View of the planetary nebula HaWe 5. USNO-A2.0 1275-02639026 and USNO-A2.0 1275-02643221 were used as Comparison (C) and Check (K) stars, respectively, and they are also indicated in the finding chart. MaxI–MinI = –0.095 mag and MaxI–MinII = –0.09 mag in R-filter. The maximum magnitude in R-filter is given in the USNO-A2.0 Catalog (Monet et al. 1998). Other cross identifications for the variable: NOMAD1 1277-0076480. The observations were carried out at the Kryoneri Observatory of the National Observatory of Athens, Corinthia, Greece between September and December 2018 using a 1.2–m prime focus telescope (f/3) equipped with the APOGEE ASPEN CG47 CCD camera and the R (Bessell) photometric filter.

3. The system USNO-A2.0 0900-14578525 (indicated as V in the finding chart) is located in the Field of View of the planetary nebula NGC 6781. USNO-A2.0 0900-14575744 and USNO-A2.0 0900-14575325 were used as Comparison (C) and Check (K) stars, respectively, and they are also indicated in the finding chart. MaxI–MinI = –0.35 mag and MaxI–MinII = –0.33 mag in R-filter. The maximum magnitude in R-filter is given in the USNO-A2.0 Catalog (Monet et al. 1998). Other cross identifications for the variable: NOMAD1 0966-0493572, 2MASS J19184804+0637562. The observations were carried out at the Kryoneri Observatory of the National Observatory of Athens, Corinthia, Greece between July and September 2018 equipped with the APOGEE ASPEN CG47 CCD camera and the R (Bessell) photometric filter.

4. The system USNO-A2.0 1125-16127402 (indicated as V in the finding chart) is located in the Field of View in the FoV of AW Vul and the variable 2MASS J20275736+2453029 (Liakos & Niarchos 2011). The star could also be a delta Sct variable with a dominant period of 0.1536 days. However, J–H = 0.52 from the 2MASS catalogue suggests a rather cool star (K type), therefore the EW-type variability seems more suitable. USNO A2.0 1125-16127586 and USNO A2.0 1125-16126802 were used as Comparison (C) and Check (K) stars, respectively, and they are also indicated in the finding chart. MaxI–MinI ~ MaxI–MinII ~ –0.25 mag in R-filter. The maximum magnitude in R-filter is given in the USNO-A2.0 Catalog (Monet et al. 1998). Other cross identifications for the variable: 2MASS J20291217+2436475. The observations were carried out at the University of Athens Observatory, Athens, Greece in July 2010 using a 20-cm newtonian reflector telescope (f/5) equipped with the SBIG ST-8XME CCD camera and the R (Bessell) photometric filter.

5. The system USNO-A2.0 1425-15515944 (indicated as V in the finding chart) is located in the Field of View of the planetary nebula A66 82 and the variable EG Cas. USNO-A2.0 1425-15522780 and USNO-A2.0 1425-15522749 were used as Comparison (C) and Check (K) stars, respectively, and they are also indicated in the finding chart. MaxI–MinI = –0.53 and MaxI–MinII = –0.49 mag in R-filter. The maximum magnitude in R-filter is given in the USNO-A2.0 Catalog (Monet et al. 1998). Other cross identifications for the variable: NOMAD1 1470-0525441. The observations were carried out at the Kryoneri Observatory of the National Observatory of Athens, Corinthia, Greece between October and November 2017 using a 1.2-m prime focus telescope (f/2.8 using a focal reducer) equipped with the ANDOR ZYLA 5.5 sCMOS camera and the R (Bessell) photometric filter.

Remarks:
In this study, photometric elements of five newly discovered W UMa- type eclipsing binaries are presented for the first time. Their variability was detected for the first time as a by-product during observations of other targets. 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
Liakos, A., Niarchos, P., 2011, Information Bulletin on Variable Stars, 5998, 3
Monet D., Bird A., Canzian B., et al., 1998, USNO-A2.0, A Catalog of Astrometric Standards, (U.S. Naval Observatory, Washington, DC), Centre de Données Astronomiques de Strasbourg, I/252