"Peremennye Zvezdy",
Prilozhenie,
vol. 12, N 21 **(2012)**

New Variable Stars in Aquila II

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Received: 28.08.2012; accepted: 13.12.2012
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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 0900-17234449	19 57 53.35, +04 55 27.6	RRAB	17.00	17.95	*	0.50311	2455796.263	Max		Comm. 1	01_PC-R.png	01_chart.jpg	01_data.txt
2		USNO-A2.0 0900-17238865	19 57 57.90, +05 28 15.5	EW	17.10	17.71	*	0.287298	2455679.5163	Min		Comm. 2	02_PC-R.png	02_chart.jpg	02_data.txt
3		USNO-A2.0 0900-17245476	19 58 04.49, +04 46 52.8	EW	15.39	15.63	*	0.39943	2455676.683	Min		Comm. 3	03_PC-R.png	03_chart.jpg	03_data.txt
4		USNO-A2.0 0900-17245853	19 58 04.87, +05 25 51.2	RRAB	17.53	18.27	*	0.57986	2455676.971	Max		Comm. 4	04_PC-R.png	04_chart.jpg	04_data.txt
5		USNO-A2.0 0900-17247093	19 58 06.11, +04 46 13.3	EW	17.64	18.34	*	0.30060	2455677.118	Min		Comm. 5	05_PC-R.png	05_chart.jpg	05_data.txt
6		USNO-A2.0 0900-17253787	19 58 12.79, +04 56 26.4	BY:	15.93	16.16	*	19.4	2455739.3	Max		Comm. 6	06_PC-R.png	06_chart.jpg	06_data.txt
7		USNO-A2.0 0900-17262085	19 58 21.12, +04 43 12.3	EW	18.72	19.80	*	0.32596	2455676.678	Min		Comm. 7	07_PC-R.png	07_chart.jpg	07_data.txt
8		USNO-A2.0 0900-17267245	19 58 26.38, +05 30 42.4	SR	14.70	<15.90	*	124	2455720	Max		Comm. 8	08_PC-R.png	08_chart.jpg	08_data.txt
9		USNO-A2.0 0900-17267377	19 58 26.55, +05 01 12.1	EW	14.90	15.04	*	0.29169	2455676.712	Min		Comm. 9	09_PC-R.png	09_chart.jpg	09_data.txt
10		USNO-A2.0 0900-17268279	19 58 27.49, +04 46 52.9	EW	15.06	15.23	*	0.47244	2455676.637	Min		Comm. 10	10_PC-R.png	10_chart.jpg	10_data.txt
11		2MASS 19582756+0454212	19 58 27.56, +04 54 21.3	RRAB	15.61	16.43	*	0.58581	2455756.4052	Max		Comm. 11	11_PC-R.png	11_chart.jpg	11_data.txt
12		USNO-A2.0 0900-17279955	19 58 39.49, +05 03 03.3	EB	14.72	14.94	*	0.67085	2455677.172	Min		Comm. 12	12_PC-R.png	12_chart.jpg	12_data.txt
13		USNO-A2.0 0900-17282796	19 58 42.46, +05 29 12.3	EW	17.24	17.74	*	0.36227	2455676.649	Min		Comm. 13	13_PC-R.png	13_chart.jpg	13_data.txt
14		USNO-A2.0 0900-17286083	19 58 45.87, +05 26 52.3	EW	17.80	18.34	*	0.30898	2455676.784	Min		Comm. 14	14_PC-R.png	14_chart.jpg	14_data.txt
15		USNO-A2.0 0900-17292382	19 58 52.22, +05 02 54.1	BY:	14.57	14.63	*	3.827	2455679.99	Max		Comm. 15	15_PC-R.png	15_chart.jpg	15_data.txt
16		USNO-A2.0 0900-17299736	19 58 59.93, +05 31 37.3	SR	14.82	15.21	*	29.5	2455734.8	Max		Comm. 16	16_PC-R.png	16_chart.jpg	16_data.txt
17		USNO-A2.0 0900-17300812	19 59 01.10, +05 11 48.2	SR:	13.59	13.67	*	28.3	2455676.5	Max		Comm. 17	17_PC-R.png	17_chart.jpg	17_data.txt
18		USNO-A2.0 0900-17307624	19 59 08.17, +04 50 43.3	EW	16.64	17.09	*	0.25982	2455676.624	Min		Comm. 18	18_PC-R.png	18_chart.jpg	18_data.txt
19		USNO-A2.0 0900-17315599	19 59 16.34, +05 29 25.8	EB	14.61:	15.05	*	0.54563	2455677.049	Min		Comm. 19	19_PC-R.png	19_chart.jpg	19_data.txt
20		USNO-A2.0 0900-17329584	19 59 30.93, +05 31 55.7	LB	14.97	15.62	*			other		Comm. 20	20_PC-R.png	20_chart.jpg	20_data.txt
21		USNO-A2.0 0900-17345475	19 59 47.54, +04 58 48.3	EW	17.34	18.00	*	0.27281	2455676.508	Min		Comm. 21	21_PC-R.png	21_chart.jpg	21_data.txt
22		USNO-A2.0 0900-17347383	19 59 49.56, +04 42 34.4	BY:	15.91	16.10	*	19.2	2455688.2	Max		Comm. 22	22_PC-R.png	22_chart.jpg	22_data.txt

23		USNO-A2.0 0900-17358099	20 00 01.38, +04 56 14.6	EW	16.87	17.58	*	0.27558	2455677.5226	Min		Comm. 23	23_PC-R.png	23_chart.jpg	23_data.txt
24		USNO-A2.0 0900-17362576	20 00 06.22, +04 51 01.3	EW	15.87	16.30	*	0.41047	2455676.547	Min		Comm. 24	24_PC-R.png	24_chart.jpg	24_data.txt
25		USNO-A2.0 0900-17363874	20 00 07.67, +05 10 49.7	EW	18.36	19.02	*	0.34882	2455676.714	Min		Comm. 25	25_PC-R.png	25_chart.jpg	25_data.txt
26		USNO-A2.0 0900-17370442	20 00 14.69, +05 17 22.6	HADS	16.87	17.19	*	0.062614	2455676.5387	Max		Comm. 26	26_PC-R.png	26_chart.jpg	26_data.txt
27		USNO-A2.0 0900-17376132	20 00 20.90, +05 30 11.3	EW	16.96	17.20	*	0.26311	2455676.809	Min		Comm. 27	27_PC-R.png	27_chart.jpg	27_data.txt
28		2MASS 20002353+0505174	20 00 23.53, +05 05 17.4	RRC	15.63	15.96	*	0.35315	2455676.839	Max		Comm. 28	28_PC-R.png	28_chart.jpg	28_data.txt
29		USNO-A2.0 0900-17386139	20 00 31.49, +05 00 36.4	BY+E:	13.93	14.03	*	25.4	2455696.3	Max		Comm. 29	29_PC-R.png	29_chart.jpg	29_data.txt
30		USNO-A2.0 0900-17410950	20 00 57.80, +05 05 59.0	EW	16.48	17.31	*	0.34864	2455679.882	Min		Comm. 30	30_PC-R.png	30_chart.jpg	30_data.txt
31		USNO-A2.0 0900-17411437	20 00 58.32, +04 43 37.2	RRAB	15.71	16.71	*	0.52299	2455832.671	Max		Comm. 31	31_PC-R.png	31_chart.jpg	31_data.txt
32		USNO-A2.0 0900-17411538	20 00 58.42, +05 18 32.3	SR	13.02	13.33	*	60.3	2455704.3	Max		Comm. 32	32_PC-R.png	32_chart.jpg	32_data.txt
33		USNO-A2.0 0900-17424721	20 01 12.92, +05 19 09.7	HADS	16.93	17.66	*	0.098432	2455722.589	Max		Comm. 33	33_PC-R.png	33_chart.jpg	33_data.txt
34		USNO-A2.0 0900-17428166	20 01 16.64, +05 00 12.2	EB	15.71	15.95	*	1.0532	2455677.505	Min		Comm. 34	34_PC-R.png	34_chart.jpg	34_data.txt
35		USNO-A2.0 0900-17428262	20 01 16.78, +04 41 43.3	SR:	16.78	19.27	*	39.8	2455737.1	Max		Comm. 35	35_PC-R.png	35_chart.jpg	35_data.txt

Comments:

1. Maximum: HJD(TT) 2455796.263 ± 0.001.

2. A close pair of USNO-A2.0-0900-17238865 and a faint star, not present in any of major catalogues. USNO-A2.0-0900-17238865 varies. Primary minimum: HJD(TT) 2455679.5163 ± 0.0003. $Min_{II} = 17^{m}.63$.

3. A close pair of two stars, not present separately in any major catalogues. Type RRC with period $0^{d}.24967$ or type EW with periods $0^{d}.66579$ or $0^{d}.49934$ are not excluded. $Min_{II} = 15^{m}.62$.

4. Possible Blazhko effect.

5. $Min_{II} = 18^{m}.25$.

6. Infrared colors J–H = 0.654, H–K = 0.132, J–K = 0.786 (2MASS) are consistent with the K spectral type (Bessell and Brett 1988) and BY: classification.

7. $Min_{II} = 19^{m}.7$.

8. Infrared colors J–H = 0.986, H–K = 0.345, J–K = 1.331 (2MASS) are consistent with the M spectral type (Bessell and Brett 1988) and SR classification. Maximum: HJD(TT) 2455720.

9. A close triplet of stars: 2MASS 19582642+0501114, 2MASS 19582645+0501154 and 2MASS 19582662+0501104. The angular resolution of our telescope is insufficient to determine which star varies. $Min_{II} = 15^{m}.02$.

10. $Min_{II} = 15^{m}.23$.

11. Maximum: HJD(TT) 2455756.4052 ± 0.0001.

12. A close pair of two stars, not present separately in any major catalogues. $Min_{II} = 14^{m}.90$.

13. $Min_{II} = 17^{m}.70$.

14. $Min_{II} = 18^{m}.24$.

15. Infrared colors J–H = 0.564, H–K = 0.141, J–K = 0.705 (2MASS) are consistent with the K spectral type (Bessell and Brett 1988) and BY: classification.

16. Infrared colors J–H = 0.707, H–K = 0.168, J–K = 0.875 (2MASS) are consistent with the M spectral type (Bessell and Brett 1988) and SR classification. Maximum: HJD(TT) 2455734.8 ± 0.2.

17. Infrared colors J–H = 0.893, H–K = 0.263, J–K = 1.156 (2MASS) are consistent with the M spectral type (Bessell and Brett 1988) and SR: classification. Type LB is also possible.

18. $Min_{II} = 16^{m}.99$.

19. $Min_{II} = 15^{m}.00$.

20. Infrared colors J–H = 0.864, H–K = 0.282, J–K = 1.146 (2MASS) are consistent with the M spectral type (Bessell and Brett 1988) and LB classification.

21. O'Connell effect. $Min_{II} = 17^{m}.94$.

22. Infrared colors J–H = 0.539, H–K = 0.119, J–K = 0.658 (2MASS) are consistent with the K spectral type (Bessell and Brett 1988) and BY: classification.

23. Primary minimum: HJD(TT) 2455677.5226 ± 0.0008. $Min_{II} = 17^{m}.58$.

24. O'Connell effect. $Min_{II} = 16^{m}.28$.

25. $Min_{II} = 18^{m}.93$.

26. The one-day alias period $0^{d}.058916$ is also possible. Maximum: HJD(TT) 2455676.5387 ± 0.0008.

27. Period $0^{d}.30306$ is also possible. $Min_{II} = 17^{m}.20$.

28. A close pair of 2MASS 20002353+0505174 and 2MASS 20002364+0505211. 2MASS 20002353+0505174 varies.

29. Infrared colors J–H = 0.596, H–K = 0.129, J–K = 0.725 (2MASS) are consistent with the K spectral type (Bessell and Brett 1988) and BY: classification. At the phase 0.91, we detect an eclipse-like minimum.

30. Period $0^{d}.42243$ is also possible. $Min_{II} = 17^{m}.10$.

31. Blazhko effect.

32. Infrared colors J–H = 0.949, H–K = 0.404, J–K = 1.353 (2MASS) are consistent with the M spectral type (Bessell and Brett 1988) and SR classification.

33. The one-day alias period $0^{d}.109205$ is also possible.

34. $Min_{II} = 15^{m}.79$.

35. Maximum: HJD(TT) 2455737.1.

Remarks:

During observations of a field in Aquila, we discovered 35 new variable stars. Our observations were carried out at the Astrotel-Caucasus observatory, located at the Astronomical station of the Kazan Federal university (Northern Caucasus), using the 300-mm Ritchey-Chretien telescope, equipped with an unfiltered Apogee Alta U9000 CCD camera. A total of 203 images with 5-minute exposures were obtained on JD 2455676–2455832. For basic reductions for dark current, flat fields and bias, we used IRAF routines. To search for of new variable stars and perform their photometry, we applied VaST software by Sokolovsky and Lebedev (2005). The comparison star was USNO-A2.0 0900-17301510 = USNO-B1.0 0948-0507157 ($\alpha = 19^h59^m01^s.81$, $\delta = +04°48'20''.5$ (J2000, 2MASS)), $R_1 = 14^m.30$, $R_2 = 14^m.60$ (USNO-B1.0). Unfiltered magnitudes were calibrated using the comparison star, assuming $R_{comp} = 14^m.45$. The coordinates of the variable stars in the table were drawn from the 2MASS catalogue (Skrutskie et al. 2006) except for stars: USNO-A2.0 0900-17262085, USNO-A2.0 0900-17267377, and USNO-A2.0 0900-17363874; their coordinates were drawn from the USNO-A2.0 catalogue (Monet et al. 1998). We searched for periods and epochs of extrema using Peranso software.

Acknowledgements: We would like to thank S.V. Antipin for helpful discussion.

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