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New Variable Stars in Auriga

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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 1200-02761757	05 02 42.37, +35 57 44.8	EA	15.01	15.26		0.9178	2455153.3618	Min		Comm. 1	01_PC-R.png	01_chart.jpg	01_data.txt
2		USNO-A2.0 1200-02767239	05 02 57.20, +35 33 40.5	EA	14.91	15.15		3.6085	2455167.397	Min		Comm. 2	02_PC-R.png	02_chart.jpg	02_data.txt
3		USNO-A2.0 1200-02768352	05 03 00.14, +35 55 55.8	EW	18.57	18.98		0.3125	2455154.358	Min		Comm. 3	03_PC-R.png	03_chart.jpg	03_data.txt
4		USNO-A2.0 1200-02771876	05 03 09.71, +36 19 30.7	BY	15.58	15.65		15.2	2455132.32	Max		Comm. 4	04_PC-R.png	04_chart.jpg	04_data.txt
5		USNO-A2.0 1200-02774280	05 03 15.94, +35 56 27.2	EA	17.19	17.95		2.775	2455120.4788	Min			05_PC-R.png	05_chart.jpg	05_data.txt
6		USNO-A2.0 1200-02774655	05 03 16.87, +35 48 13.4	EW	16.62	17.17		0.3322	2455125.4514	Min		Comm. 6	06_PC-R.png	06_chart.jpg	06_data.txt
7		USNO-A2.0 1200-02781697	05 03 34.94, +36 17 40.9	EW	17.77	18.23		0.3958	2455125.4413	Min		Comm. 7	07_PC-R.png	07_chart.jpg	07_data.txt
8		USNO-A2.0 1200-02783048	05 03 38.31, +35 34 04.2	EA	17.69	18.01		1.025	2455124.4326	Min		Comm. 8	08_PC-R.png	08_chart.jpg	08_data.txt
9		USNO-A2.0 1200-02800523	05 04 23.77, +35 39 59.5	EW	17.82	18.50		0.2350	2455146.3293	Min		Comm. 9	09_PC-R.png	09_chart.jpg	09_data.txt
10		USNO-A2.0 1200-02800931	05 04 24.74, +35 54 01.9	BY:	15.57	15.63		4.99	2455122.07	Max		Comm. 10	10_PC-R.png	10_chart.jpg	10_data.txt
11		USNO-A2.0 1200-02801179	05 04 25.37, +36 06 03.3	EB	18.13	18.78		0.4119	2455132.3680	Min		Comm. 11	11_PC-R.png	11_chart.jpg	11_data.txt
12		USNO-A2.0 1200-02802809	05 04 29.36, +36 21 37.3	EA/RS	15.89	16.06		0.9341	2455154.3153	Min		Comm. 12	12_PC-R.png	12_chart.jpg	12_data.txt
13		USNO-A2.0 1200-02803426	05 04 30.92, +36 00 29.8	EA	16.42	16.85		1.7283	2455131.428	Min		Comm. 13	13_PC-R.png	13_chart.jpg	13_data.txt
14		USNO-A2.0 1200-02805179	05 04 35.32, +36 13 14.8	EW	15.79	15.88		0.4826	2455125.4372	Min		Comm. 14	14_PC-R.png	14_chart.jpg	14_data.txt
15		USNO-A2.0 1200-02811592	05 04 51.34, +35 51 17.0	RRAB	17.00	18.26		0.5436	2455146.3429	Max		Comm. 15	15_PC-R.png	15_chart.jpg	15_data.txt
16		USNO-A2.0 1200-02815938	05 05 02.56, +35 41 06.2	DSCT	15.66	15.71		0.1330	2455153.3696	Max		Comm. 16	16_PC-R.png	16_chart.jpg	16_data.txt
17		USNO-A2.0 1200-02823027	05 05 20.59, +35 36 01.1	EB	17.86	18.63		0.7024	2455146.3327	Min		Comm. 17	17_PC-R.png	17_chart.jpg	17_data.txt
18		USNO-A2.0 1200-02826906	05 05 30.46, +36 15 56.4	EW	17.04	17.32		0.3384	2455146.3292	Min		Comm. 18	18_PC-R.png	18_chart.jpg	18_data.txt
19		USNO-A2.0 1200-02834748	05 05 50.63, +36 11 44.7	EW	17.63	17.98		0.2806	2455154.3137	Min		Comm. 19	19_PC-R.png	19_chart.jpg	19_data.txt
20		USNO-A2.0 1200-02835224	05 05 51.86, +36 17 53.5		15.10	15.17		4.45	2455122.139	Max		Comm. 20	20_PC-R.png	20_chart.jpg	20_data.txt
21		USNO-A2.0 1200-02836387	05 05 54.87, +35 43 31.0	EB	16.41	16.50		0.8176	2455119.8451	Min		Comm. 21	21_PC-R.png	21_chart.jpg	21_data.txt
22		USNO-A2.0 1200-02839716	05 06 03.57, +36 20 05.1	BY:	14.80	14.93		12.8	2455141.06	Max		Comm. 22	22_PC-R.png	22_chart.jpg	22_data.txt
23		USNO-A2.0 1200-02844024	05 06 14.85, +36 10 26.4	RRC	16.50	16.60		0.3533	2455154.3424	Max		Comm. 23	23_PC-R.png	23_chart.jpg	23_data.txt
24		USNO-A2.0 1200-02848783	05 06 26.78, +35 31 04.8	EW	16.45	17.00		0.3668	2455124.4435	Min		Comm. 24	24_PC-R.png	24_chart.jpg	24_data.txt
25		USNO-A2.0 1200-02849739	05 06 29.37, +35 51 06.5	BY	14.62	14.69		5.35	2455123.98	Max		Comm. 25	25_PC-R.png	25_chart.jpg	25_data.txt
26		USNO-A2.0 1200-02857868	05 06 49.05, +35 42 27.6	BY	14.50	14.57		2.9	2455119.86	Max		Comm. 26	26_PC-R.png	26_chart.jpg	26_data.txt
27		USNO-A2.0 1200-02858840	05 06 51.42, +35 46 34.8	EW	17.60	17.88		0.5781	2455159.2500	Min		Comm. 27	27_PC-R.png	27_chart.jpg	27_data.txt

Comments:

1. Primary minima:

HJD(TT)	+/-
2455131.3340	0.0006
2455153.3618	0.0002

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

2. Primary minimum: HJD(TT) 2455167.397 +/- 0.001. $Min_{II}=14^{m}.97$.

3. Primary minimum: HJD(TT) 2455154.358 +/- 0.001. $Min_{II}=18^{m}.93$.

4. Infrared colors J-H=0.543, H-K=0.133, J-K=0.676 (2MASS) are consistent with dK spectral type (Bessell and Brett 1988) and BY classification.

6. Primary minima:

HJD(TT)	+/-
2455119.4714	0.0005
2455124.4574	0.0004
2455125.4514	0.0003
2455126.4473	0.0005
2455148.3697	0.0006
2455154.3524	0.0004
2455167.3080	0.0007

$Min_{II}=17^{m}.10$.

7. Primary minima:

HJD(TT)	+/-
2455125.4413	0.0007
2455148.3971	0.0009
2455154.331	0.001

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

8. Primary minima:

HJD(TT)	+/-
2455124.4326	0.0008
2455125.455	0.002
2455126.478	0.001

9. Primary minima:

HJD(TT)	+/-
2455124.4732	0.0009
2455125.4125	0.0007
2455146.3293	0.0005
2455153.3780	0.0007

2455154.3201	0.0009
2455159.2544	0.0007
2455160.193	0.001

$Min_{II}=18^{m}.36$.

10. Infrared colors J-H=0.391, H-K=0.109, J-K=0.500 (2MASS) are consistent with dK spectral type (Bessell and Brett 1988) and BY: classification.

11. Primary minima:

HJD(TT)	+/-
2455132.3680	0.0009
2455153.3735	0.0005

$Min_{II}=18^{m}.44$.

12. Infrared colors J-H=0.391, H-K=0.062, J-K=0.453 (2MASS) are consistent with RS classification. Primary minima:

HJD(TT)	+/-
2455125.354	0.001
2455153.3794	0.0009
2455154.3153	0.0006

$Min_{II}=15^{m}.94$.

13. Primary minimum: HJD(TT) 2455131.428 +/- 0.001. $Min_{II}=16^{m}.48$.

14. Primary minima:

HJD(TT)	+/-
2455124.4684	0.0009
2455125.4372	0.0005
2455154.398	0.001
2455160.1935	0.0008
2455167.435	0.002

$Min_{II}=15^{m}.86$.

15. Blazhko effect. On the phased light curve, black points correspond to observations on JD 2455118-2455132; red points, on JD 2455146-2455158; green points, on JD 2455159-2455176. Four maxima:

HJD(TT)	+/-
2455129.4685	0.0005
2455146.3429	0.0004
2455147.4273	0.0008
2455153.3891	0.0007

16. Maxima:

HJD(TT)	+/-
2455119.450	0.0015
2455125.437	0.0011
2455146.323	0.0017

2455153.3696	0.0009
2455154.3039	0.0009

17. Primary minima:

HJD(TT)	+/-
2455146.3327	0.0009
2455153.3501	0.0009

$Min_{II}=18^{m}.37$.

18. Primary minima:

HJD(TT)	+/-
2455124.3332	0.0005
2455146.3292	0.0005
2455160.204	0.001

$Min_{II}=17^{m}.32$.

19. Primary minima:

HJD(TT)	+/-
2455148.4203	0.0006
2455154.3137	0.0007

$Min_{II}=17^{m}.92$.

20. Period $8^{d}.77$ and type ELL: are possible. Infrared colors J-H=0.157, H-K=0.077, J-K=0.234 (2MASS) are consistent with dF spectral type (Bessell and Brett 1988).

21. $Min_{II}=16^{m}.43$.

22. Infrared colors J-H=0.744, H-K=0.221, J-K=0.965 (2MASS) are consistent with K spectral type (Bessell and Brett 1988) and BY: classification.

23. Infrared colors J-H=0.326, H-K=0.023, J-K=0.349 (2MASS) are consistent with RRC classification.
Maxima:

HJD(TT)	+/-
2455125.3756	0.0010
2455154.3424	0.0008

24. Primary minima:

HJD(TT)	+/-
2455124.4435	0.0002
2455128.4763	0.0008
2455159.2853	0.0006
2455167.3546	0.0007

$Min_{II}=16^{m}.97$.

25. Infrared colors J-H=0.575, H-K=0.270, J-K=0.845 (2MASS) are consistent with K spectral type (Bessell and Brett 1988) and BY classification.

26. Infrared colors J-H=0.603, H-K=0.202, J-K=0.805 (2MASS) are consistent with dK spectral type (Bessell and Brett 1988) and BY classification.

27. Primary minimum: HJD(TT) 2455159.2500 +/- 0.0006. $Min_{II}=17^{m}.79$.

Remarks:

During observations of a field in Auriga, we discovered 27 new variable stars. Our observations were carried out at the Astrotel-Caucasus observatory using the 300-mm Ritchey-Chretien telescope, equipped with an unfiltered Apogee Alta U9000 CCD camera. A total of 776 images with 5-minute exposures were obtained on JD 2455119 - 2455176. For basic reductions for dark current, flat fields, and bias, we used IRAF routines. For search and photometry of new variable stars, we applied VaST software by Sokolovsky and Lebedev (2005). The comparison star was USNO-A2.0 1200-02802479 = USNO-B1.0 1257-0088583 (RA=05:04:28.582, Dec=+35:45:24.61, J2000, 2MASS) $R_1=13^{m}.86$, $R_2=13^{m}.54$ (USNO-B1.0) Unfiltered magnitudes were calibrated using the comparison star, assuming $R_{comp}=13^{m}.70$. The coordinates of the variable stars in the table were drawn from the 2MASS catalogue (Skrutskie et al. 2006). For search for periods and epochs of extrema, we use Peranso software (www.peranso.com)

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References:

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