

New variable stars in the field of SGR0501+4516

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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 1350-05153788	04 59 18.23, +45 13 20.3	EW	16.72	17.48	*	0.27561	2454815.5632	min		Comm. 1	01_PC-R.png	01_ch.jpg	01_data.txt
2		USNO-A2.0 1350-05172056	05 00 05.31, +45 27 19.4	EW	16.73	17.32	*	0.33114	2454703.4495	min		Comm. 2	02_PC-R.png	02_ch.jpg	02_data.txt
3		USNO-A2.0 1350-05186635	05 00 43.59, +45 10 57.5	EB	17.19	18.04	*	0.58608	2454746.3330	min		Comm. 3	03_PC-R.png	03_ch.jpg	03_data.txt
4		USNO-A2.0 1275-04151758	05 01 13.34, +44 55 40.5	EW	15.58	15.72	*	0.66287	2454783.4925	min		Comm. 4	04_PC-R.png	04_ch.jpg	04_data.txt
5		USNO-A2.0 1350-05198744	05 01 16.40, +45 20 45.6	EW	17.16	17.52	*	0.45828	2454782.5474	min		Comm. 5	05_PC-R.png	05_ch.jpg	05_data.txt
6		USNO-A2.0 1350-05199134	05 01 17.43, +45 10 58.1	EB	16.25	16.60	*	0.55149	2454702.6513	min		Comm. 6	06_PC-R.png	06_ch.jpg	06_data.txt
7		USNO-A2.0 1350-05219110	05 02 10.17, +45 14 18.0	EA	17.07	17.68	*	1.72655	2454746.3434	min		Comm. 7	07_PC-R.png	07_ch.jpg	07_data.txt
8		USNO-A2.0 1275-04181976	05 02 13.43, +44 52 46.7	EW	16.76	17.05	*	0.22967	2454827.4154	min		Comm. 8	08_PC-R.png	08_ch.jpg	08_data.txt
9		USNO-A2.0 1350-05221297	05 02 15.88, +45 33 39.4	EA	15.88	16.41	*	2.11904	2454704.2781	min		Comm. 9	09_PC-R.png	09_ch.jpg	09_data.txt
10		USNO-A2.0 1275-04185993	05 02 22.10, +44 52 21.3	EB	15.63	15.99	*	1.42566	2454782.2460	min		Comm. 10	10_PC-R.png	10_ch.jpg	10_data.txt
11		USNO-A2.0 1350-05254489	05 03 38.84, +45 19 56.3	RRC:	15.19	15.34	*	0.31781:	2454782.3617	max		Comm. 11	11_PC-R.png	11_ch.jpg	11_data.txt

Comments:

- Four observed primary minima: HJD 2454782.2109, 2454783.3101, 2454783.5892, 2454815.5632. Min II = 17.31. O'Connell effect.
- Three observed primary minima: HJD 2454703.4495, 2454782.2610, 2454783.2531. Min II = 17.30.
- We observed four primary minima: HJD 2454723.4702, 2454746.3330, 2454783.2555, 2454815.4833. Min II = 17.53.
- Min II = 15.70. O'Connell effect.
- We observed five primary minima: HJD 2454782.5474, 2454783.4642, 2454815.5457, 2454826.5462, 2454827.4634. Min II = 17.49.

6. Min II = 16.46.
7. Two observed primary minima: HJD 2454739.4327, 2454746.3434. Min II = 17.63.
8. Three observed primary minima: HJD 2454782.3985, 2454783.3170, 2454827.4154. Min II = 16.98.
9. Min II = 16.19. Possibly RS-type variability in maximum brightness.
10. Two observed primary minima: HJD 2454782.2460, 2454826.4431. Min II = 15.83. O'Connell effect.
11. The periods 0.29779 d (type RRC), 0.59563 d and 0.63533 d (both type EW) are also possible. J-K = 0.670 (2MASS).

Remarks:

During observations of the field of the soft gamma repeater SGR0501+4516 (Barthelmy et al. 2008), we discovered 11 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. In total, 824 images with 5-minute exposures were obtained on JD 2454702 - 2454829. For basic reductions for dark current, flat fields and bias, we used MaxIm DL software. For search and photometry of new variable stars, we applied VaST software by Sokolovsky and Lebedev (2005). The comparison star was USNO-B1.0 1351-0128409 (05:02:03.24, +45:06:16.1, (J2000), R1 = 14.13, R2 = 14.16). Unfiltered magnitudes were calibrated assuming $R_{\text{comp}} = 14.145$. The coordinates of the variable stars in the table were drawn from the 2MASS catalogue (Cutri et al. 2003). Our observations were analyzed using Peranso software (www.peranso.com).

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References:

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