

## New Variable Stars in the Field of GRB 080605

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Received: 21.06.2009; accepted: 23.09.2009

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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 0900-09848395	17 28 20.12, +03 33 17.2	EW	16.01	16.25		0.27728	2454921.4391	min		<a href="#">Comm. 1</a>	<a href="#">01_PC-R.png</a>	<a href="#">01_ch.jpg</a>	<a href="#">01_data.txt</a>
2		GSC 0409-00817, USNO-A2.0 0900-09851316	17 28 25.64, +04 14 33.6	BY:	13.63	13.74		1.592	2454884.04	max		<a href="#">Comm. 2</a>	<a href="#">02_PC-R.png</a>	<a href="#">02_ch.jpg</a>	<a href="#">02_data.txt</a>
3		USNO-A2.0 0900-09855082	17 28 32.78, +03 51 29.9	BY:	13.74	13.77		0.9455	2454672.7438	max		<a href="#">Comm. 3</a>	<a href="#">03_PC-R.png</a>	<a href="#">03_ch.jpg</a>	<a href="#">03_data.txt</a>
4		GSC 0409-01749, USNO-A2.0 0900-09856851	17 28 36.22, +04 14 19.4	BY:	13.88	13.93		0.7964	2454882.8226	max		<a href="#">Comm. 4</a>	<a href="#">04_PC-R.png</a>	<a href="#">04_ch.jpg</a>	<a href="#">04_data.txt</a>
5		USNO-A2.0 0900-09858435	17 28 39.22, +03 55 18.6	EW	14.82	15.00		0.67896	2454883.0814	min		<a href="#">Comm. 5</a>	<a href="#">05_PC-R.png</a>	<a href="#">05_ch.jpg</a>	<a href="#">05_data.txt</a>
6		USNO-A2.0 0900-09859517	17 28 41.40, +03 22 54.8	ELL:	14.58	14.65		0.6950	2454672.4168	min		<a href="#">Comm. 6</a>	<a href="#">06_PC-R.png</a>	<a href="#">06_ch.jpg</a>	<a href="#">06_data.txt</a>
7		USNO-A2.0 0900-09864003	17 28 49.90, +03 52 43.7	EB	16.16	16.34		0.69253	2454927.5215	min		<a href="#">Comm. 7</a>	<a href="#">07_PC-R.png</a>	<a href="#">07_ch.jpg</a>	<a href="#">07_data.txt</a>
8		USNO-A2.0 0900-09868815	17 28 59.09, +04 03 34.4	EW	16.84	17.25		0.24972	2454945.5460	min		<a href="#">Comm. 8</a>	<a href="#">08_PC-R.png</a>	<a href="#">08_ch.jpg</a>	<a href="#">08_data.txt</a>
9		USNO-A2.0 0900-09884501	17 29 28.96, +03 29 33.8	EW	15.76	16.02		0.38679	2454928.5213	min		<a href="#">Comm. 9</a>	<a href="#">09_PC-R.png</a>	<a href="#">09_ch.jpg</a>	<a href="#">09_data.txt</a>
10		USNO-A2.0 0900-09885651	17 29 31.22, +04 07 57.1	EW	14.45	14.85		0.39571	2454920.4900	min		<a href="#">Comm. 10</a>	<a href="#">10_PC-R.png</a>	<a href="#">10_ch.jpg</a>	<a href="#">10_data.txt</a>
11		USNO-A2.0 0900-09888851	17 29 37.66, +03 46 27.0	EW	16.11	16.55		0.35549	2454927.4836	min		<a href="#">Comm. 11</a>	<a href="#">11_PC-R.png</a>	<a href="#">11_ch.jpg</a>	<a href="#">11_data.txt</a>
12		USNO-A2.0 0900-09890077	17 29 40.10, +04 09 33.0	EW	17.13	17.52		0.31449	2454948.4403	min		<a href="#">Comm. 12</a>	<a href="#">12_PC-R.png</a>	<a href="#">12_ch.jpg</a>	<a href="#">12_data.txt</a>
13		USNO-B1.0 0936-0303884	17 30 10.69, +03 36 20.2	EB	17.03	17.51		0.32933	2454948.4393	min		<a href="#">Comm. 13</a>	<a href="#">13_PC-R.png</a>	<a href="#">13_ch.jpg</a>	<a href="#">13_data.txt</a>
14		GSC 0422-00012, USNO-A2.0 0900-09912055	17 30 23.52, +04 08 54.1	EB	13.22	13.30		0.75992	2454921.5135	min		<a href="#">Comm. 14</a>	<a href="#">14_PC-R.png</a>	<a href="#">14_ch.jpg</a>	<a href="#">14_data.txt</a>
15		USNO-A2.0 0900-09912621	17 30 24.60, +03 49 50.9	RRAB	16.50	17.82		0.46408	2454948.4688	max		<a href="#">Comm. 15</a>	<a href="#">15_PC-R.png</a>	<a href="#">15_ch.jpg</a>	<a href="#">15_data.txt</a>
16		USNO-A2.0 0900-09917731	17 30 33.76, +03 29 17.6	EW	16.91	17.26		0.30950	2454920.5006	min		<a href="#">Comm. 16</a>	<a href="#">16_PC-R.png</a>	<a href="#">16_ch.jpg</a>	<a href="#">16_data.txt</a>
17		USNO-A2.0 0900-09933601	17 31 01.84, +03 35 01.8	EB	15.08	15.39		0.37243	2454928.4379	min		<a href="#">Comm. 17</a>	<a href="#">17_PC-R.png</a>	<a href="#">17_ch.jpg</a>	<a href="#">17_data.txt</a>
18		USNO-A2.0 0900-09947163	17 31 24.98, +03 22 31.0	BY:	14.55	14.59		12.5	2454683.63	max		<a href="#">Comm. 18</a>	<a href="#">18_PC-R.png</a>	<a href="#">18_ch.jpg</a>	<a href="#">18_data.txt</a>

### Comments:

1. Primary minima: HJD(TT) 2454921.4391, 2454934.4677. Min II = 16.23.

2. Infrared colors J-H = 0.315, H-K = 0.063 (2MASS) are consistent with an early G spectral type (Bessell and Brett 1988). The variability type is very uncertain, we suggest one of the possibilities.

3. Infrared colors  $J-H = 0.534$ ,  $H-K = 0.12$  (2MASS) are consistent with an early K spectral type (Bessell and Brett 1988) and with the BY classification.
4. Infrared colors  $J-H = 0.536$ ,  $H-K = 0.112$  (2MASS) are consistent with an early K spectral type (Bessell and Brett 1988) and with the BY classification.
5. Min II = 14.99.
6. A close pair of stars 2MASS 17284130+0322552 and 2MASS 17284149+0322536. The angular resolution of our telescope is insufficient to determine which of the two stars varies. The coordinates in the table are for the blend of the two stars from the USNO-A2.0 catalogue.
7. Primary minimum: HJD(TT) 2454927.5215. Min II = 16.25.
8. Min II = 17.19.
9. A close pair of stars 2MASS 17292890+0329321 and 2MASS 17292891+0329360. The angular resolution of our telescope is insufficient to determine which of the two stars varies. The coordinates in the table are for the blend of the two stars from the USNO-A2.0 catalogue. Primary minimum: HJD(TT) 2454928.5213. Min II = 15.98.
10. Primary minima: HJD(TT) 2454920.4900, 2454935.5254. Min II = 14.77.
11. Primary minima: HJD(TT) 2454927.4836, 2454933.5333, 2454948.4610. Min II = 16.51.
12. Primary minima: HJD(TT) 2454920.4527, 2454942.4692, 2454948.4403. Min II = 17.46.
13. Primary minima: HJD(TT) 2454920.4503, 2454921.4351, 2454948.4393. Min II = 17.27.
14. Primary minima: HJD(TT) 2454921.5135, 2454934.4366. Min II = 13.26.
15. Maxima: HJD(TT) 2454921.5523, 2454928.5162, 2454935.4762, 2454948.4688, 2454949.4000.
16. Primary minima: HJD(TT) 2454920.5006, 2454933.4966, 2454934.4249. Min II = 17.19.
17. Primary minimum: HJD(TT) 2454928.4379. Min II = 15.26.
18. Infrared colors  $J-H = 0.394$ ,  $H-K = 0.137$  (2MASS) are consistent with an early K spectral type (Bessell and Brett 1988) and with the BY classification.

### Remarks:

During observations of the field of GRB 080605 (Sbarufatti et al. 2008), we discovered 18 new variable stars. Our observations were carried out at Astrotel-Caucasus observatory using the 300-mm Ritchey-Chretien telescope, equipped with an unfiltered Apogee Alta U9000 CCD camera. A total of 527 images with 5-minute exposures were obtained on JD 2454672 - 2454954. 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 GSC 0418-001697 = USNO-B1.0 0936-0304538 (17:30:50.65, +03:41:37.1, J2000;  $R_1 = 13.39$ ,  $R_2 = 13.30$ ). Unfiltered magnitudes were calibrated using the comparison star, assuming  $R_{comp} = 13.345$ . The coordinates of the variable stars in the table were drawn from the 2MASS catalogue (Cutri et al. 2003) except for the star USNO-A2.0 0900-09912621 (missing in the 2MASS catalogue) and the stars USNO-A2.0 0900-09859517 and USNO-A2.0 0900-09884501 (see the Comments); their coordinates were drawn from the USNO-A2.0 catalogue (Monet et al. 1998). For search for periods and epochs of extrema, we use Peranso software ([www.peranso.com](http://www.peranso.com))

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

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