

NEW ECLIPSING BINARIES FOUND IN THE NSVS DATA

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Abstract. Results from a search for eclipsing binaries in one of the most extensive sky surveys in recent years - Northern Sky Variability Survey (NSVS, Wozniak et al., 2004) are presented.

1. INTRODUCTION

There are several searches for eclipsing binaries in NSVS (Akerlof et al., 2000; Otero et al., 2004; 2005; 2006a; 2006b; Otero and Wils, 2005; Otero, 2008, etc.), based on the parameters, existing in the on line version of the NSVS database, and applying number of statistical criteria. Using the similar set of criteria we found in our previous work (Dimitrov and Popov, 2007) 21 eclipsing binaries of different types).

2. METHODS AND RESULTS

This investigation is targeted at the North Pole region of the sky. The search uses multiparametric method for detecting of the variability in the light curves of the stars. One of the parameters is variability index, defined by Welch and Stetson (1993), used also by Akerlof et al.(2000). Applying Lomb (1976) - Scargle (1982) periodogram analyses we make a basic selection of variables. The third parameter for the selection is the statistical analysis of the scatter in the light curve, correlated with the amplitude of the variability.

In the Table 1 we present data for 36 new eclipsing variable stars found in the course of our search. For those stars there is no information present in SIMBAD, ADS and VSX repositories.

The first column gives the GSC designation and the second - NSVS ID, following columns contain the maximum brightness; the depth of the primary eclipse; the epoch of minimum light, derived from the available data and, in the last column, variability type. Period and the epoch of the minimum are determined by the periodogram analysis method of Lomb-Scargle, mentioned above.

Fig. 1 presents light curves for the stars from Table 1.

Table 1: Parameters of variable stars

NSVS ID	Name	Mmax [mag]	Am [mag]	P [days]	HJD0 2450000+	Type
60360	GSC04619-00955	12.59	0.34	3.5034	1300.85	EA
113543	GSC04599-00164	14	0.78	3.9464	1303.70	EA
114995	GSC04474-01002	14.2	0.69	0.8004	1300.80	EA
119794	GSC04607-00632	12.66	0.51	1.2518	1300.55	EB
125006	GSC04600-00826	11.29	0.11	1.2326	1301.30	E
126986	GSC04611-01045	11.78	0.16	1.3496	1300.50	EA
128328	GSC04608-00371	11.5	0.13	2.8316	1300.75	EB
131374	GSC04604-00683	10.76	0.13	5.5446	1304.65	EA
134361	GSC04605-01358	11.23	0.28	1.7332	1301.30	EA
134415	GSC04601-01265	12.99	0.5	2.4056	1301.15	EA
134505	GSC04601-02483	12.43	0.36	1.2478	1301.10	EA/EB
156318	GSC04614-00334	12.55	0.33	0.846	1301.25	EA
157133	GSC04273-00252	11.8	0.29	2.3218	1300.65	EA
160479	GSC04290-01157	12.59	0.37	3.2934	1303.65	EA
165070	GSC04484-00902	13.04	0.24	1.0286	1300.55	E
166341	GSC04477-00383	10.48	0.17	8.9358	1304.70	EA
168248	GSC04477-00127	13.9	0.37	0.7058	1301.26	E
171160	GSC04485-00616	12.63	0.29	6.03	1305.80	EA
179833	GSC04478-01057	13.44	0.86	2.3746	1300.75	EA/EB
180777	GSC04292-00422	12.34	0.35	2.1572	1300.60	EA
188332	GSC04493-00448	11.62	0.3	13.755	1300.50	EA
190349	GSC04479-00023	12.25	0.23	1.2016	1300.57	EA
194871	GSC04293-00506	13.05	0.35	1.3774	1301.70	E
215847	GSC04299-01398	10.26	0.12	5.1718	1300.80	EB
220368	GSC04308-00743	12.42	0.44	2.3612	1300.95	EA
220544	GSC04308-00788	11.45	0.15	2.5852	1302.45	E
222186	GSC04295-01191	12.02	0.35	1.6564	1301.25	EA/EB
240890	GSC04301-01322	12.19	0.24	1.2036	1301.75	EA
261781	GSC04307-00427	12.65	0.27	3.8754	1304.20	EA
270256	GSC04493-01809	13.45	0.46	3.7432	1302.85	EA
286567	GSC04512-02065	14.35	0.77	1.318	1300.65	EB
286760	GSC04495-00040	13.51	0.9	3.1214	1303.25	EA
293426	GSC04610-01686	12.77	0.25	3.1806	1302.65	E
309924	GSC04500-00615	13.08	0.25	3.0816	1302.60	EA
323318	GSC04506-01094	11.81	0.09	4.7794	1304.00	E
336434	GSC04296-00790	12.51	0.24	2.0666	1300.95	EB

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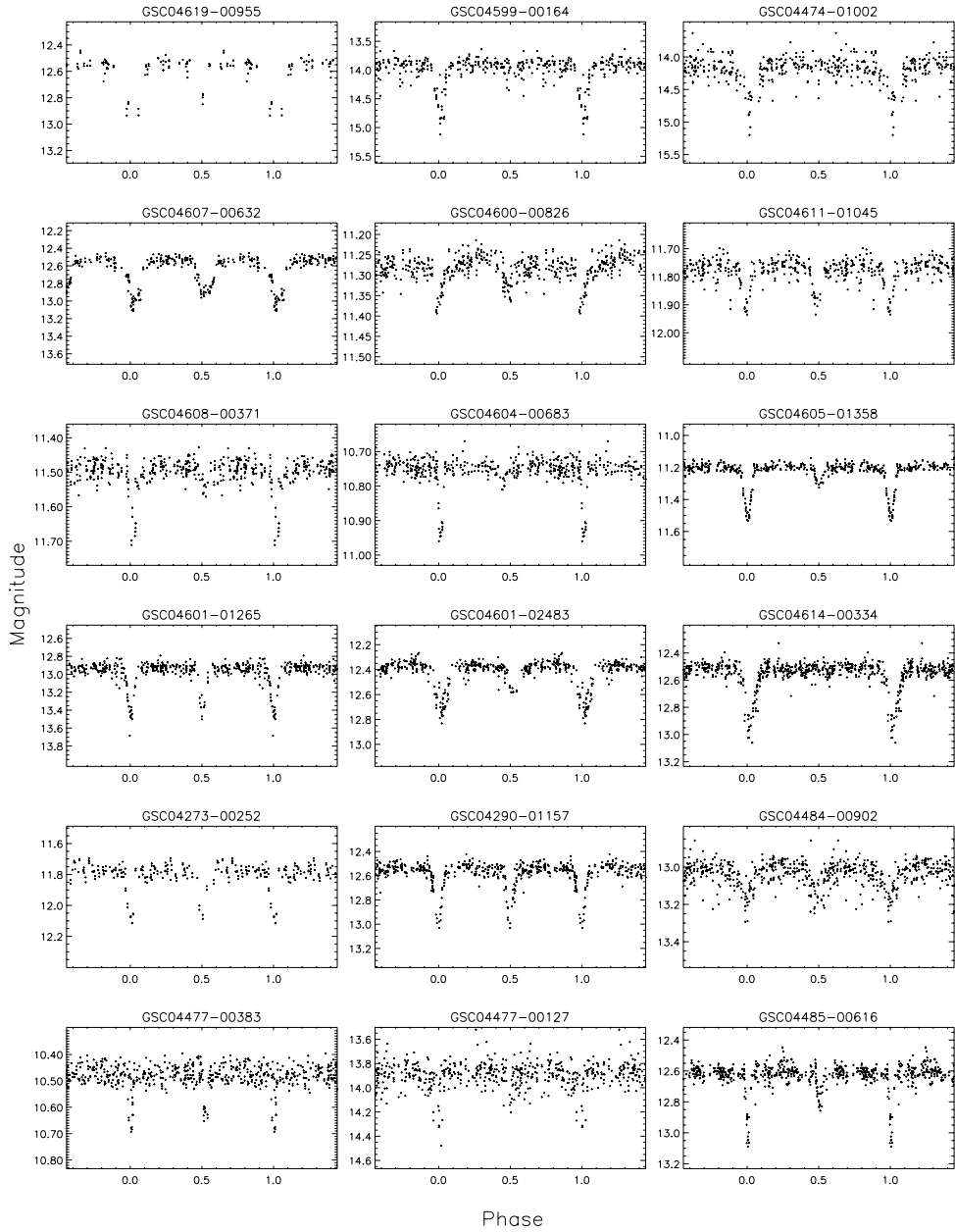


Figure 1: Light curves of new variable stars.

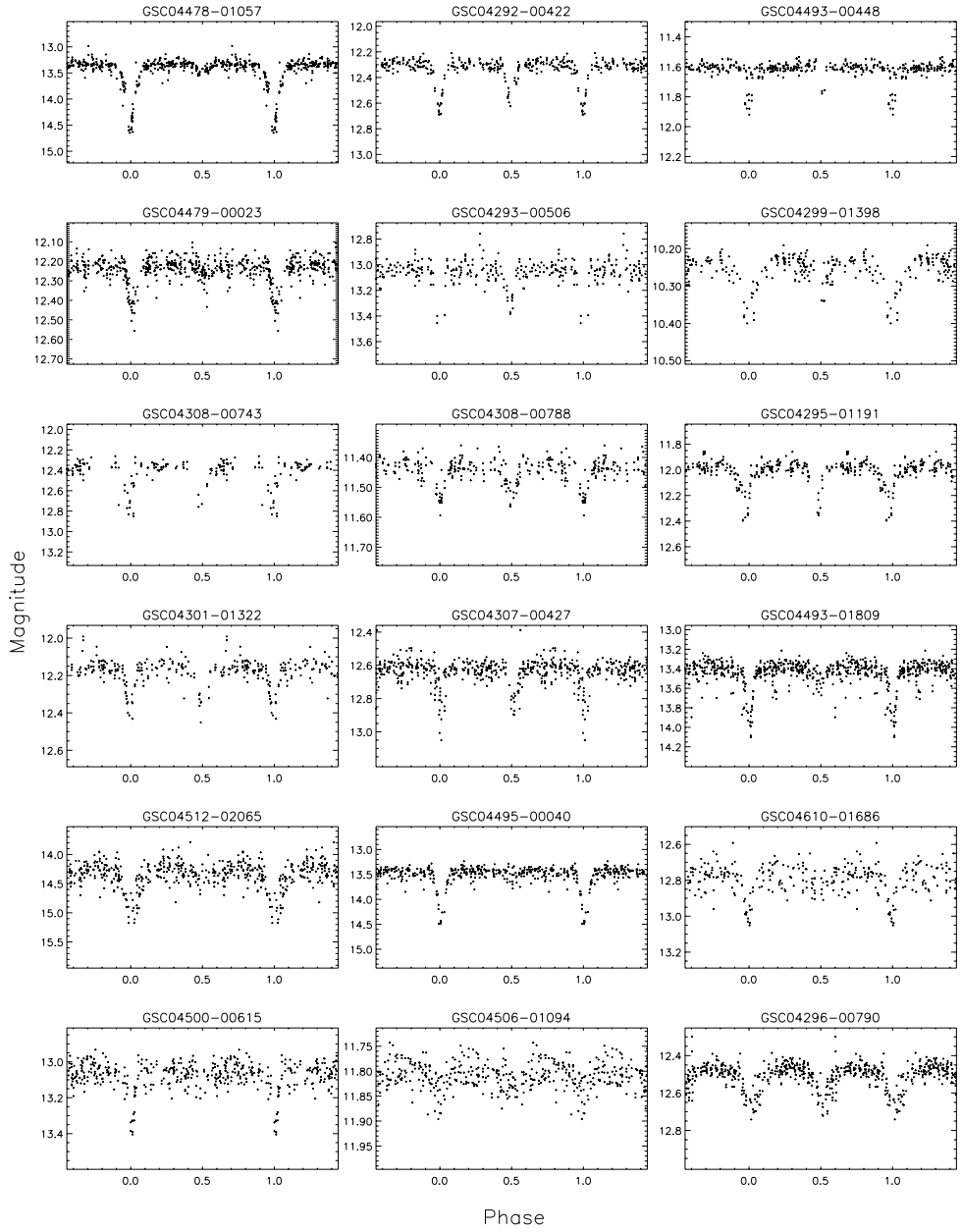


Figure 1: Continued.

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