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New Variable Stars I

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#	Name	Other	Coord (J2000)	Type	Max	Min	System	Period	Epoch (JD)	type	Sp	Comment	L.Curve	Find.Chart	Data
1		TYC 2798 01443 1	00 56 17.24, +38 10 59.5	EA	10.73:	11.04:	SWASP	1.46513	2453968.642	min		Comm. 1	1.PNG	chart1.PNG	NSVS 3796478 NSVS 6371694 1SWASP_da
2		TYC 2798 01339 1	00 57 30.89, +37 38 19.0	EW	10.24:	10.45:	SWASP	0.359617	2454000.747	min		Comm. 2	2.PNG	chart2.PNG	NSVS 3797390 NSVS 6372550 1SWASP_da
3		GSC 2300-00373	01 28 19.51, +34 08 29.4	EW	13.35	13.85	CV	0.408978	2454400.750	min		Comm. 3	3.PNG	chart3.PNG	NSVS 6448135 CSS_data_3.txt 1SWASP_da
4		GSC 2818-00032	01 33 21.11, +39 37 22.7	EA	13.25	13.87	CV	1.049015	2454050.510	min		Comm. 4	4.PNG	chart4.PNG	NSVS 3832703 CSS_data_4.txt 1SWASP_da
5		GSC 2298-01220	01 42 10.28, +33 17 41.7	EW	13.87	14.12	CV	0.308405	2454400.618	min		Comm. 5	5.PNG	chart5.PNG	NSVS 6459193 NSVS 6469620 CSS_data_5.txt 1SW
6		GSC 2829-01342	02 05 12.69, +39 10 24.7	EW	13.22	14.10	CV	0.3663295	2454000.853	min		Comm. 6	6.PNG	chart6.PNG	NSVS 3970725 CSS_data_6.txt 1SWASP_da
7		GSC 2309-00876	02 07 44.18, +30 42 34.3	EW	13.35	13.74	CV	0.5999047	2454700.592	min		Comm. 7	7.PNG	chart7.PNG	NSVS 6489888 CSS_data_7.txt 1SWASP_da
8		GSC 2328-00100	02 33 17.23, +32 04 30.8	EW	12.3	12.6	CV	0.350789	2454000.891	min		Comm. 8	8.PNG	chart8.PNG	NSVS 6561926 CSS_data_8.txt 1SWASP_da
9		GSC 2846-00631	02 52 37.94, +39 20 21.7	EW	13.61	14.21	CV	0.378293	2454000.523	min		Comm. 9	9.PNG	chart9.PNG	NSVS 4019697 CSS_data_9.txt 1SWASP_da
10		GSC 4344-01798	05 51 04.50, +69 18 13.6	EW	13.57	14.10	CV	0.353034	2451460.725	min		Comm. 10	10.PNG	chart10.PNG	NSVS 560093 NSVS 646656 CSS_data_1
11		TYC 2522 02117 1	11 10 26.95, +36 32 43.8	EA	11.18	11.42	SWASP	2.75259	2454192.428	min		Comm. 11	11.PNG	chart11.PNG	NSVS 7573735 NSVS 4965700 1SWASP_dat
12		TYC 3465 00523 1	14 11 51.58, +45 31 08.4	ELL	10.90	10.99	SWASP	0.3237397	2454219.448	min		Comm. 12	12.PNG	chart12.PNG	NSVS 5097680 NSVS 5114836 1SWASP_dat
13		TYC 3472 00139 1	14 26 09.44, +46 16 07.0	RS	12.45	12.65	SWASP	0.290529	2453852.525	max		Comm. 13	13.PNG	chart13.PNG	NSVS 5102389 NSVS 5120060 NSVS 5126896 1SW
14		GSC 3481-00893	15 08 05.71, +46 10 29.7	EW	13.71	14.06	CV	0.269949	2454800.540	min		Comm. 14	14.PNG	chart14.PNG	NSVS 5141620 NSVS 5157845 NSVS 5177641 CSS_data_14
15		GSC 4183-01034	15 14 00.94, +64 55 34.0	EA	14.08	14.86	CV	2.457803	2451460.833	min		Comm. 15	15.PNG	chart15.PNG	NSVS 2770706 NSVS 2786249 CSS_data_
16		GSC 3483-01100	15 30 57.52, +47 03 38.0	EA	12.85	13.45	CV	0.969362	2454800.680	min		Comm. 16	16.PNG	chart16.PNG	NSVS 5186554 CSS_data_16.txt 1SWASP_da
17		GSC 3496-00935	15 46 51.96, +51 52 39.2	EA	12.95	13.3	CV	5.6643	2451450.77	min		Comm. 17	17.PNG	chart17.PNG	NSVS 5192073 NSVS 5203396 NSVS 2812793 CS
18		GSC 3060-01565	15 55 06.08, +42 54 01.8	EA	14.38	15.30	CV	1.34119	2453170.435	min		Comm. 18	18.PNG	chart18.PNG	NSVS 5177041 NSVS 5225601 CSS_data_18.txt 1SW
19		GSC 3490-01506	15 58 54.15, +46 35 49.0	EW	13.23	13.67	CV	0.2720302	2454600.728	min		Comm. 19	19.PNG	chart19.PNG	NSVS 5207156 CSS_data_19.txt 1SWASP_da
20		GSC 3494-01283	16 04 18.00, +47 32 51.6	EW	14.54	14.81	CV	0.289738	2454800.555	min		Comm. 20	20.PNG	chart20.PNG	NSVS 5209725 CSS_data_20.txt
21		GSC 3491-01656	16 08 51.30, +46 18 46.7	EW	13.20	13.44	CV	0.380296	2454297.458	min		Comm. 21	21.PNG	chart21.PNG	NSVS 5211555 NSVS 5232682 CSS_data_21.txt 1SW
22		GSC 4192-02354	16 22 21.55, +64 22 51.8	EW:	13.66	13.92	CV	0.3493185	2451460.695	min		Comm. 22	22.PNG	chart22.PNG	NSVS 2848698 NSVS 2868052 CSS_data_
23		GSC 3505-01730	16 34 50.67, +51 17 02.7	EW	13.23	13.57	CV	0.354694	2454800.578	min		Comm. 23	23.PNG	chart23.PNG	NSVS 5272088 CSS_data_23.txt 1SWASP_da
24		GSC 4194-00831	17 07 08.14, +64 14 02.0	RRAB	14.58	15.25	CV	0.5798441	2455000.975	max		Comm. 24	24.PNG	chart24.PNG	NSVS 2882424 NSVS 2863761 CSS_data_
25		USNO-A2.0 1575-03761797	17 11 05.98, +72 15 12.7	RRAB	>14.64	15.33	CV	0.480127	2451460.611	max		Comm. 25	25.PNG	chart25.PNG	NSVS 1087214 CSS_data_25.txt
26		GSC 3887-00218	17 12 23.47, +54 02 52.2	EW	14.10	14.51	CV	0.286851	2454800.599	min		Comm. 26	26.PNG	chart26.PNG	NSVS 2907177 NSVS 5306377 CSS_data_26.txt 1SW
27		GSC 4198-00812	17 13 00.64, +61 37 21.3	EW	14.12	14.67	CV	0.2943078	2455000.668	min		Comm. 27	27.PNG	chart27.PNG	NSVS 2883803 CSS_data_27.txt 1SWASP_da
28		GSC 3899-00384	17 15 20.88, +58 28 37.9	EW	12.01	12.65	CV	0.409522	2454700.642	min		Comm. 28	28.PNG	chart28.PNG	NSVS 2909777 CSS_data_28.txt 1SWASP_da
29		GSC 4206-00007	17 17 33.31, +64 59 52.1	EW	13.36	<13.76	CV	0.3240023	2451440.716	min		Comm. 29	29.PNG	chart29.PNG	NSVS 2866325 NSVS 2886359 CSS_data_
30		USNO-A2.0 1200-08587296	17 42 34.79, +33 23 23.0	EW	14.18	14.77	CV	0.3639745	2454700.617	min		Comm. 30	30.PNG	chart30.PNG	NSVS 8051542 CSS_data_30.txt 1SWASP_da
31		TYC 2634 00567 1	18 16 28.99, +36 44 55.5	RRC	12.35	12.80	CV	0.297101	2454700.614	max		Comm. 31	31.PNG	chart31.PNG	NSVS 8102062 CSS_data_31.txt 1SWASP_da
32		GSC 2748-01569	22 41 47.80, +36 24 56.0	EB	13.50	13.93	CV	0.4108777	2454800.894	min		Comm. 32	32.PNG	chart32.PNG	NSVS 8914545 CSS_data_32.txt 1SWASP_da
33		GSC 3214-00856	22 44 19.24, +37 51 51.4	EW	13.10	13.50	CV	0.520461	2454000.699	min		Comm. 33	33.PNG	chart33.PNG	NSVS 8917523 NSVS 8917524 NSVS 6119936 CSS_data_33

34		GSC 2758-01092	23 03 06.37, +33 51 51.2	EW	13.80	14.23	CV	0.3933915	2454700.501	min		Comm. 34	34.PNG	chart34.PNG	NSVS 9006581 CSS_data_34.txt 1SWASP_da
35		GSC 2755-00120	23 06 28.11, +33 40 09.5	EW	13.72	14.42	CV	0.3970362	2454700.546	min		Comm. 35	35.PNG	chart35.PNG	NSVS 9010076 CSS_data_35.txt 1SWASP_da
36		GSC 3221-01562	23 10 53.83, +40 03 24.5	EW	13.10	13.40	CV	0.668475	2454300.644	min		Comm. 36	36.PNG	chart36.PNG	NSVS 6151416 CSS_data_36.txt 1SWASP_da
37		GSC 2759-00762	23 11 21.68, +35 23 52.3	EW	13.95	14.35	CV	0.340265	2454700.660	min		Comm. 37	37.PNG	chart37.PNG	NSVS 9014838 CSS_data_37.txt 1SWASP_da
38		GSC 3217-01698	23 18 45.94, +38 49 21.8	EW	13.18	13.27	SWASP	0.2927985	2454355.445	min		Comm. 38	38.PNG	chart38.PNG	NSVS 6160380 NSVS 6221543 NSVS 9021426 NSVS 3595155 CSS_

Comments:

1. D = 0.17 P. MinII = 10^{m}.81: (SWASP). Combined brightness of three stars, TYC 2798 01443 1 (= var), TYC 2798 00986 1, and GSC 2798-01302 was measured in the NSVS and SWASP, making the corresponding amplitudes much too low. The ROTSE data with photometric correction flags were kept for the analysis. I identify variability with TYC 2798 01443 1 because, in the 1SWASP survey, the object 1SWASP J005617.23+381059.5 that corresponds to TYC 2798 01443 1 has the largest amplitude compared to the 1SWASP objects corresponding to the two neighbors.

2. MinII = 10^{m}.44: (SWASP). Combined brightness of two stars, TYC 2798 01339 1 (= var) and TYC 2798 01223 1, was measured in the NSVS and SWASP, and thus the corresponding amplitudes are much too low. The amplitude of the 1SWASP object that corresponds to the variable considerably exceeds the amplitude of its 1SWASP neighbor.

3. MinII = 13^{m}.75 (CV). Combined brightness of two stars, GSC 2300-00373 (= var) and GSC 2300-00471, is presented in the NSVS and SWASP data, and thus the corresponding amplitudes are considerably too low.

4. D = 0.16 P. MinII = 13^{m}.33 (CV). Combined brightness of two stars, GSC 2818-00032 (= var) and GSC 2818-00315, is presented in the NSVS and SWASP data, and thus the corresponding amplitudes are considerably too low.

5. MinII = 14^{m}.08 (CV). Combined brightness of two stars, GSC 2298-01220 (= var) and a fainter one, GSC 2298-00996, was measured in the NSVS and SWASP; the corresponding amplitudes are somewhat too low. The light elements from the NSVS data are: JD(min) = 2451480.623 + 0.3084×E. The ROTSE data with photometric correction flags were kept for the analysis.

6. MinII = 13^{m}.98 (CV). Combined brightness of two stars, GSC 2829-01342 (= var) and GSC 2829-01108, was measured in the NSVS and SWASP, and thus the corresponding amplitudes are considerably too low.

7. MinII = 13^{m}.70 (CV). From the 1SWASP data, 13.72–14.09, MinII = 14^{m}.07. The ROTSE data with photometric correction flags were kept for the analysis.

8. Combined brightness of two stars, GSC 2328-00100 (= var) and TYC 2328 00104 1, was measured in the NSVS and SWASP, and thus the corresponding amplitudes are considerably too low.

9. MinII = 14^{m}.21 (CV). Combined brightness of two stars, GSC 2846-00631 (= var) and the fainter USNO-A2.0 1275-01820135, was measured in the NSVS and SWASP, and thus the corresponding amplitudes are somewhat too low. The ROTSE data with photometric correction flags were kept for the analysis.

10. From the ROTSE-I/NSVS data, 13.6–14.0, MinII = 13^{m}.95 in the R band. The ROTSE data with photometric correction flags were kept for the analysis.

11. D = 0.04 P. From the ROTSE-I/NSVS data, 11.05–11.30 in the R band.

12. MinII = 10^{m}.99 (SWASP). From the ROTSE-I/NSVS data, 10.97&ndash11.06, MinII = 11^{m}.04 in the R band.

13. Double wave. 12.15–12.35 in the R band from the ROTSE-I/NSVS data. According to NSVS data, the elements are: JD(max) = 2451400.730 + 0.29053×E. 1RXS J142610.2+461601. B–V = 1.447 (Tycho2), J–H = 0.619 (2MASS). A star with a considerable proper motion (in the Tycho-2 catalog, pmRA (mas/yr) = 93.2; pmDec (mas/yr) = –77.7).

14. MinII = 14^{m}.05 (CV). From the 1SWASP data, 13.9–14.2; from the ROTSE-I/NSVS data, 14.0–14.3 in the R band. The ROTSE data with photometric correction flags were kept for the analysis.

15. D = 0.16: P. Combined brightness of two stars, GSC 4183-01034 (= var) and the brighter one, GSC 4183-00077, was measured in the NSVS, and thus the corresponding amplitude is much too low.

16. D = 0.15 P. MinII = 13^{m}.00 (CV). From the ROTSE-I/NSVS data, 13.15–13.65, MinII = 13^{m}.25 in the R band.

17. D = 0.09 P. MinII = 13^{m}.1 (R). From the Catalina surveys data, 12.9–13.2 in the CV band.

18. D = 0.08 P. MinII = 14^{m}.61: (CV). Combined brightness of two stars, GSC 3060-01565 (= var) and GSC 3060-01095, was measured in the NSVS and SWASP, and thus the corresponding amplitudes are much too low. The ROTSE data with photometric correction flags were kept for the analysis.

19. MinII = 13^{m}.67 (CV). Combined brightness of two stars, GSC 3490-01506 (= var) and GSC 3490-00874, was measured in the NSVS and SWASP, and thus the corresponding amplitudes are considearbly too low. The ROTSE data with photometric correction flags were kept for the analysis.

20. MinII = 14^{m}.74 (CV). According to NSVS data, the light elements are: JD(min) = 2451400.572: + 0.28974×E.

21. MinII = 13^{m}.41 (CV). Only data for JD 2454297 were taken from the SWASP data; the rest of the data have poor quality and large scatter. According to NSVS data, the light elements are: JD(min) = 2451450.850 + 0.3803×E. The ROTSE data with photometric correction flags were kept for the analysis.

22. MinII = $13^{m}.92$ (CV). From the ROTSE-I/NSVS data, 13.55–13.75 in the R band. The NSVS probably presents combined brightness for two stars, GSC 4192-02354 (= var) and GSC 4192-01340, thus the corresponding amplitude is somewhat too low.

23. MinII = $13^{m}.50$ (CV). From the 1SWASP data, 13.48–13.78, MinII = $13^{m}.74$; from the ROTSE-I/NSVS data, 13.5–13.9, MinII = $13^{m}.85$ in the R band. According to NSVS data, the light elements are: JD(min) = 2451400.680 + 0.35469×E.

24. M–m = 0.17 P. J–H = 0.310 (2MASS).

25. From the ROTSE-I/NSVS data, 14.3–15.0 in the R band. J–H = 0.026 (2MASS).

26. MinII = $14^{m}.50$ (CV). From the 1SWASP data, 14.42–14.82, MinII = $14^{m}.79$; from the ROTSE-I/NSVS data, 14.25–14.6 in the R band . According to NSVS data, the light elements are: JD(min) = 2451400.528 + 0.28685×E. The ROTSE data with photometric correction flags were kept for the analysis.

27. MinII = $14^{m}.60$ (CV). From the ROTSE-I/NSVS data, 14.3–14.8 in the R band. The ROTSE data with photometric correction flags were kept for the analysis.

28. Combined brightness of three stars: GSC 3899-00384 (= var), GSC 3899-01237, and GSC 3899-00288 was measured in the NSVS and 1SWASP data, the corresponding amplitudes are too low. 1RXS J171519.4+582840.

29. Combined brightness of two stars, GSC 4206-00007 (= var) and GSC 4206-00584, was measured in the NSVS, and thus the corresponding amplitude is too low. The minima are of the same depth. The ROTSE data with photometric correction flags were kept for the analysis.

30. MinII = $14^{m}.73$ (CV). Combined brightness of two stars, USNO-A2.0 1200-08587296 (= var) and GSC 2611-00682, was measured in the NSVS and 1SWASP, the corresponding amplitudes are somewhat too low. The ROTSE data with photometric correction flags were kept for the analysis.

31. M–m = 0.39 P. Combined brightness of two stars, TYC 2634 00567 1 (= var) and GSC 2634-00427, was measured in the NSVS and 1SWASP, thus the corresponding amplitudes are considerably too low. J–H = 0.125 (2MASS), B–V = 0.223 (Tycho2).

32. MinII = $13^{m}.79$ (CV). Combined brightness of two stars, GSC 2748-01569 and GSC 2748-01141, was measured in the NSVS and SWASP, and thus the corresponding amplitudes are somewhat too low. The ROTSE data with photometric correction flags were kept for the analysis.

33. MinII = $13^{m}.47$ (CV). From the 1SWASP data, 13.33–13.69, MinII = $13^{m}.65$; from the RORSE-I/NSVS dat, 13.3–13.7 in the R band. The ROTSE data with photometric correction flags were kept for the analysis. The star has a faint close companion GSC 3214-00529.

34. The depth of MinII varies in the CSS data. From the 1SWASP data, 14.12–14.38, MinII = $14^{m}.35$; from the ROTSE-I/NSVS data, 13.95–14.3 in the R band. According to NSVS data, the light elements are: JD(min) = 2451460.502 + 0.39339×E.

35. According to CSS data, the system's mean brightness varies. Combined brightness of two stars, GSC 2755-00120 (= var) and USNO-A2.0 1200-19695639, was measured in the NSVS and SWASP, and thus the corresponding amplitudes are somewhat too low.

36. According to 1SWASP, the minima have the same depth. From the 1SWASP data, 13.25–13.50 from the 1SWASP data; from the ROTSE-I/NSVS data, 13.4–13.65 in the R band. The star has a faint close companion GSC 3221-00976.

37. MinII = $14^{m}.30$ (CV). From the 1SWASP data, 14.3–14.65. According to NSVS data, the light elements are: JD(min) = 2451440.598 + 0.34027×E.

38. MinII = $13^{m}.25$ (SWASP). From the Catalina surveys data, 12.84–12.98, MinII = $12^{m}.95$ in the CV band. From the ROTSE-I/NSVS data, 13.31–13.42, MinII = $13^{m}.38$ in the R band.

Remarks:

I present a discovery of 38 new variable stars. My search for variables was carried out in the publicly available data of the Northern Sky Variability Survey (NSVS , Wozniak et al. 2004). Besides, to improve classification and light element, I analyzed all available observations of these stars from the Catalina Surveys (Drake et al. 2009) and SuperWASP (Butters et al. 2010).

Many of the variables presented in this paper are close visual pairs that cannot be separated with the low resolution of the surveys like NSVS or 1SWASP. Data from the Catalina surveys, which have resolution as good as 1–2 arcseconds, provide a possibility to solve this problem. In these cases, combined brightness of several stars was measured in the NSVS and 1SWASP, so that the resulting amplitude is too low and the variable's mean brightness appears much higher than in reality; for this reason, only CV (Catalina) magnitudes are tabulated for such stars. In our analysis of 1SWASP data, nights with a large scatter of data points around the light curve were disregarded.

These observations were analyzed using the period-search software developed by Dr. V.P. Goranskij for Windows environment. The coordinates were drawn either from the Tycho-2 or from the 2MASS catalogs.

The SuperWASP observations are available as FITS tables, which were converted into ASCII tables using the OMC2ASCII program as described by Sokolovsky (2007).

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