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NEW ELEMENTS FOR 5 RR LYRAE STARS

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The variability of these stars was announced by Hoffmeister (1967); no further observations or ephemeris were published until today. Recent estimations, made on photographic plates taken with the Sonneberg Observatory 40cm Astrograph during the years 1964-1994, have allowed to determine the type of variability as well as first elements (see Table 1). The given elements were obtained by means of least-squares solutions. Photographic amplitudes were derived with respect to magnitudes of the comparison stars given in Table 3. Individual data are available upon request.

This research made use of the SIMBAD data base, operated by the CDS at Strasbourg, France.

Table 1. Summary of this paper

Star	Type	Epoch 2400000+	Period (day)	Max.	Min.	M–m	No. of Plates
V546 Her	RRab	45003.696	0.4672577	13 ^m 8	15 ^m 2	0 ^p 15	242
		4	5				
NSV 07922	RRab	44749.376	0.6043045	13 ^m 2	13 ^m 8	0 ^p 13	215
		6	8				
NSV 07978	RRab	44343.462	0.4625066	13 ^m 1	14 ^m 3	0 ^p 11	240
		3	4				
NSV 08101	RRab	44345.475	0.6207320	13 ^m 6	15 ^m 2	0 ^p 13	242
		4	6				
NSV 08147*	RRab	38532.447	0.536721	14 ^m 0	15 ^m 6	0 ^p 11	77
		8	7				
		46641.390	0.536743				144
		7	2				

* Variable period; elements valid for J.D. 2437110-2439648 and J.D. 2442924-2449488, respectively

Table 2. Individual maxima and $O - C$ values according to the elements derived in this paper

Star	HJD (max.)	Epoch	$O - C$	Star	HJD (max.)	Epoch	$O - C$
V546 Her	38549.468	-13813	0.003	NSV 07978	38501.551	-12631	0.010
	38556.466	-13798	-0.008		38533.459	-12562	0.005
	38585.440	-13736	-0.004		38852.576	-11872	-0.007
	38935.435	-12987	0.015		38940.464	-11682	0.004
	39262.486	-12287	-0.015		42987.396	-2932	0.003
	39284.453	-12240	-0.009		44266.680	-166	-0.006
	39619.496	-11523	0.010		44343.447	0	-0.015
	39648.436	-11461	-0.020		44374.440	67	-0.010
	39917.607	-10885	0.011		44732.432	841	0.002
	44016.399	-2113	0.019		44757.401	895	-0.004
	44343.447	-1413	-0.014		45077.463	1587	0.003
	44365.436	-1366	0.014		45491.404	2482	0.001
	44372.452	-1351	0.021		45854.459	3267	-0.012
	44373.369	-1349	0.004		48088.400	8097	0.022
	44757.432	-527	-0.019		49154.458	10402	0.002
	45003.703	0	0.007	NSV 08101	38502.523	-9413	-0.002
	45054.605	109	-0.022		38640.336	-9191	0.008
	45055.575	111	0.013		38852.619	-8849	0.001
	45223.331	470	0.024		39620.472	-7612	0.009
	45441.498	937	-0.018		39638.467	-7583	0.002
	46612.425	3443	-0.039		44345.475	0	0.000
	46613.415	3445	0.016		44373.393	45	-0.015
	46649.374	3522	-0.004		44427.411	132	-0.001
	47770.330	5921	0.001		45055.575	1144	-0.017
NSV 07922	38553.465	-10253	0.024		45854.459	2431	-0.015
	38556.466	-10248	0.003		49193.416	7810	0.024
	38579.425	-10210	-0.002		49216.362	7847	0.003
	38585.440	-10200	-0.030	NSV 08147	38532.440	-10877	0.164
	38852.576	-9758	0.004		38640.336	-10676	0.174
	39260.475	-9083	-0.003		39615.549	-8859	0.125
	39286.461	-9040	-0.002		44370.428	-4231	-0.002
	39648.436	-8441	-0.005		44749.388	-3525	0.017
	44016.399	-1213	0.044		44757.401	-3510	-0.021
	44749.388	0	0.012		45052.610	-2960	-0.021
	45491.435	1228	-0.027		45223.331	-2642	0.016
	46612.425	3083	-0.022		46612.425	-54	0.019
	48356.506	5969	0.036		46641.392	0	0.002
	49098.546	7197	-0.010		48804.454	4030	-0.010
	49193.416	7354	-0.016				

Table 3. Comparison stars and cross references

V546 Her		NSV 07922		NSV 07978		
S 9614		S 9615		S 9619		
GSC 969.0808		GSC 395.1432		GSC 396.1719		
Comp. No.	GSC	m*	GSC	m*	GSC	m*
1	969.1224	13 ^m 5	395.1503	13 ^m 4	396.2048	13 ^m 3
2	969.0789	14 ^m 3	395.1769	13 ^m 7	396.2031	13 ^m 9
3	969.0517	14 ^m 9	395.1562	13 ^m 9	396.2000	14 ^m 4
4	969.0654	15 ^m 4				

NSV 08101		NSV 08147		
S 9624		S 9626		
GSC 410.2317		GSC 410.1242		
Comp. No.	GSC	m*	GSC	m*
1	397.2150	12 ^m 9	410.1534	14 ^m 5
2	410.2347	14 ^m 3	410.1390	14 ^m 9
3	410.2261	14 ^m 9	410.0796	16 ^m 0

* Magnitudes refer to the B values of the USNO-A2.0 catalogue

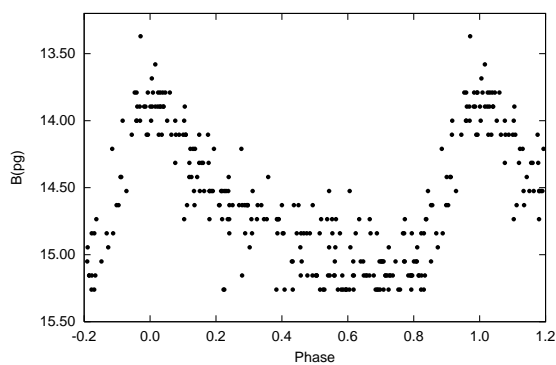


Figure 1. Light curve of V546 Her

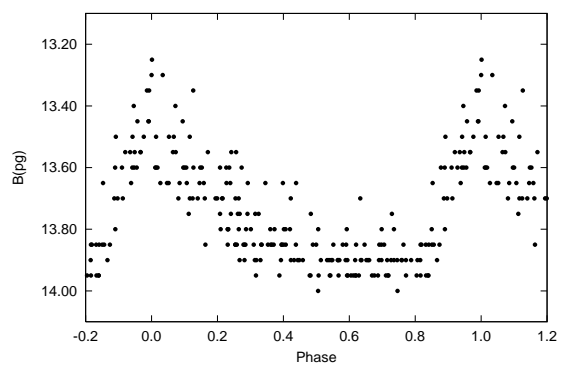


Figure 2. Light curve of NSV 07922

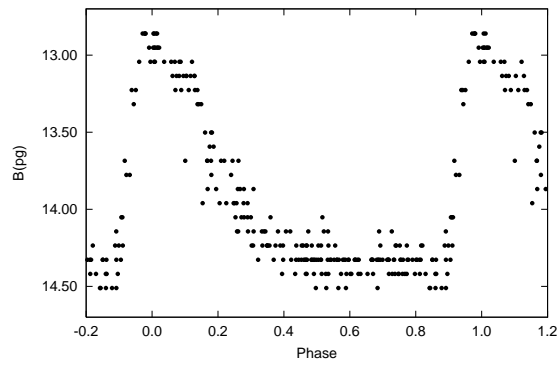


Figure 3. Light curve of NSV 07978

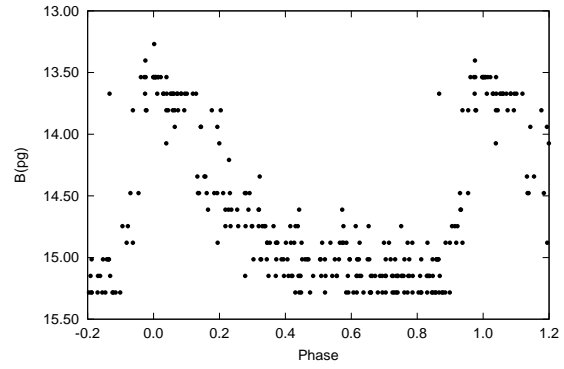


Figure 4. Light curve of NSV 08101

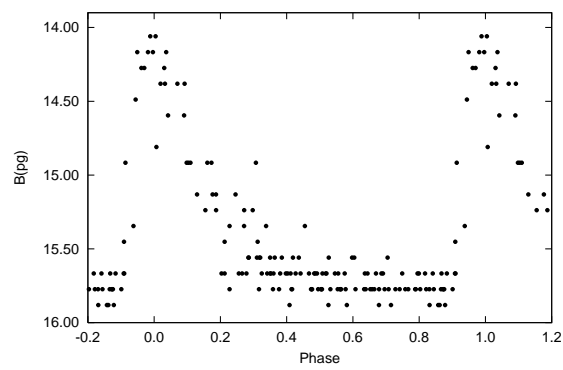


Figure 5. Light curve of NSV 08147

Reference:

Hoffmeister, C., 1967, *Astron. Nachr.*, **289**, 205