

Photographic Observations of Five Stars in the Her-Oph Region

Klaus Haeussler¹

Bruno-H.-Buerger-Sternwarte Hartha, Germany






(1) info@sternwarte-hartha.de

Abstract Five stars in the HerOph region were observed on Sonneberg Observatory plates taken with the 40cm astrograph. New or improved elements are given.

Objects V 1132 Her, V 800 Oph, V 1072 Oph, NSV 9623, NSV 9711

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All stars were discovered by C. Hoffmeister, E.H. Boyce, or M. Huruha. I have investigated the stars in the field of Alpha Ophiuchi on 276 plates taken with the 400/1600 mm astrograph of Sonneberg Observatory. The field of view of the plates is about 10×10 degrees. First elements are given for four stars (V 1132 Her, V 800 Oph, NSV 9632, and NSV 9711). Improved elements have been derived for V 1072 Oph. The period of time covered is JD 2438641 through 2449488.

The brightness of the comparison stars are based on B-magnitudes of the USNO-A2.0 catalogue. Individual data are available embedded in this document: V1132 Her , V800 Oph , V1072 Oph , NSV 6923 , NSV 9711 .

This research has made use of the SIMBAD database, operated by CDS at Strasbourg, France.

V 1132 Her = USNO-A2.0 1050-09159742 = S 9825 (RRab)

The star was discovered by Hoffmeister (1967) as an eclipsing binary. However, according to my observations V 1132 Her is an RR Lyrae star (see phase light-curve in Fig. 1) with the following elements:

$$\text{Max} = \text{JD}_{\text{hel}} 2449481.484 + 0.5543320 \times E \\ \pm 0.008 \pm 0.0000009$$

Type: RRab, Max: 13^m6 pg, Min: 15^m0 pg, M-m=0.16 P

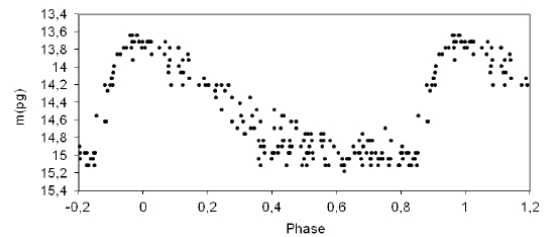



Figure 1: Phase light curve of V 1132 Her.

Table 1: Observed Maxima of V 1132 Her (this paper). 

JD hel.	E	O-C	Obs.
39256.511	-18451	0.007	Hau
39261.496	-18442	0.003	Hau
39286.452	-18397	0.014	Hau
39593.566	-17843	0.028	Hau
39638.419	-17762	-0.019	Hau
45022.654	-8049	-0.011	Hau
45077.516	-7950	-0.028	Hau
45082.524	-7941	-0.009	Hau
45902.384	-6462	-0.006	Hau
46254.402	-5827	0.011	Hau
46476.639	-5426	-0.039	Hau
46612.445	-5181	-0.045	Hau
46642.417	-5127	-0.007	Hau
46648.502	-5116	-0.019	Hau
46702.291	-5019	-0.001	Hau
47436.273	-3695	0.046	Hau
47769.365	-3094	-0.016	Hau
47804.342	-3031	0.038	Hau
48357.588	-2033	0.061	Hau
48362.530	-2024	0.014	Hau
48831.490	-1178	0.009	Hau
49193.438	-525	-0.022	Hau
49484.482	0	-0.002	Hau

V 800 Oph = USNO-A2.0 0975-09481145 = HV 11003 (M)

The star was discovered by Boyce and Huruata (1942). An investigation of the star on Sonneberg plates indicates that V 800 Oph is a Mira-type variable with the following elements:

$$\text{Max} = 2447397 + 266.15 \times E$$

Type: M, Max: 13^m5 pg, Min: [16^m6 pg

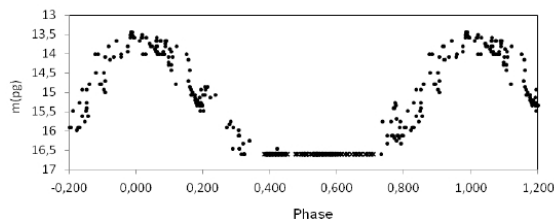


Figure 2: Phase light curve of V 800 Oph (symbol Δ indicates fainter than 16^m6).

Table 2: Observed Maxima of V 800 Oph (this paper).

JD hel.	E	O-C	Obs.
38607.4	-33	-6.6	Hau
38882.6	-32	2.4	Hau
40746.5	-25	3.2	Hau
45531.4	-7	-2.5	Hau
45815.6	-6	15.5	Hau
46328.4	-4	-4.1	Hau
46595.5	-3	-3.1	Hau
47391.4	0	-5.6	Hau

V 1072 Oph = USNO-A2.0 0975-09687712 = S 9823 (RRab)

Hoffmeister (1967) discovered this star of RR Lyrae type. Batunova (1986) reported first observations and derived a period of 0^d.444715. This period is, however, slightly too long to adequately reproduce observations from Sonneberg plates. Improved elements are:

$$\text{Max} = \text{JD}_{\text{hel}} 2449475.459 + 0.4434257 \times E \pm 0.007 \pm 0.0000005$$

Type: RRab, Max: 14^m5 pg, Min: 16^m0 pg, M-m=0.12 P

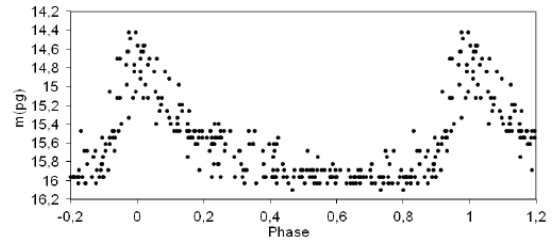


Figure 3: Phase light curve of V 1072 Oph.

Table 3: Observed Maxima of V 1072 Oph (this paper and Batunova (Bat, 1986)).

JD hel.	E	O-C	Obs.
38584.485	-24561	0.004	Hau
38640.379	-24435	0.026	Hau
38901.531	-23846	0.001	Hau
38933.442	-23774	-0.015	Hau
39349.378	-22836	-0.012	Hau
43731.328	-12954	0.005	Bat
44099.355	-12124	-0.011	Hau
45818.518	-8247	-0.009	Hau
45854.441	-8166	-0.004	Hau
45945.384	-7961	0.037	Hau
45973.281	-7898	-0.002	Hau
46175.493	-7442	0.008	Hau
46254.402	-7264	-0.013	Hau
46614.453	-6452	-0.024	Hau
46702.291	-6254	0.016	Hau
46991.362	-5602	-0.026	Hau
48357.588	-2521	0.005	Hau
49475.473	0	0.014	Hau

NSV 9623 = USNO-A2.0 0975-09640963 = HV 11034 (EB)

The star was discovered by Boyce and Huruata (1942) and was classified as an eclipsing binary. I have observed the star on 276 plates. The period of NSV 9623 appears variable, the period changed at around epoch -2000. The following elements have been calculated:

From JD 2438500 to 2440000:

$$\text{Max} = \text{JD}_{\text{hel}} 2438530.465 + 3.10572 \times E \pm 0.018 \pm 0.0001$$

Since JD 2440000:

$$\text{Max} = \text{JD}_{\text{hel}} 2449154.525 + 3.10538 \times E \pm 0.075 \pm 0.0001$$

Type: EB, Max: 14^m3 pg, Min I: 15^m5 pg, Min II: 14^m8 pg

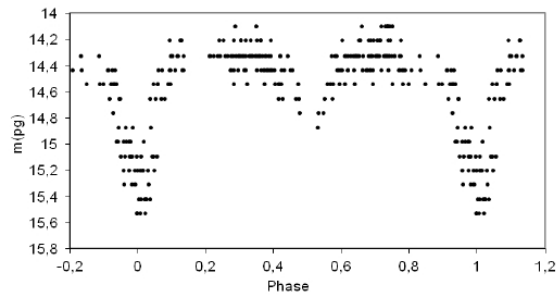


Figure 4: Phase light curve of NSV 9623.

Table 4: Observed Minima of NSV 9623 (this paper, O-C based on the second elements given above).



JD hel.	E	O-C	Obs.
38530.493	-3421	-0.502	Hau
38533.543	-3420	-0.558	Hau
38856.565	-3316	-0.496	Hau
39350.376	-3157	-0.442	Hau
46474.652	-863	0.076	Hau
46645.368	-808	-0.004	Hau
46648.502	-807	0.024	Hau
46679.400	-797	-0.131	Hau
48356.523	-257	0.083	Hau
49154.475	0	-0.050	Hau

NSV 9711 = USNO-A2.0 0975-09744568 = S 9826 (RRab)

The star was discovered by Hoffmeister (1967) as an RR Lyrae star. The star has the following elements:

$$\text{Max} = \text{JD}_{\text{hel}} 2448802.434 + 0.4754828 \times E \\ \pm 0.007 \pm 0.0000005$$

Type: RRab, Max: 14^m1 pg, Min: 15^m3 pg, M-m = 0.19 P

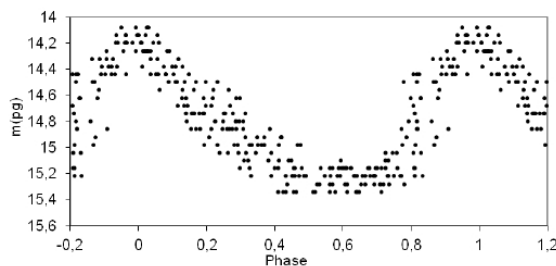


Figure 5: Phase light curve of NSV 9711.

Table 5: Observed Maxima of NSV 9711 (this paper).



JD hel.	E	O-C	Obs.
38521.567	-21622	0.021	Hau
38522.503	-21620	0.006	Hau
38532.525	-21599	0.043	Hau
38641.380	-21370	0.013	Hau
39259.478	-20070	-0.017	Hau
39260.430	-20068	-0.016	Hau
39288.508	-20009	0.009	Hau
39289.461	-20007	0.011	Hau
39298.483	-19988	-0.002	Hau
39378.321	-19820	-0.045	Hau
41151.424	-16091	-0.017	Hau
41918.374	-14478	-0.021	Hau
44370.456	-9321	-0.003	Hau
45077.494	-7834	-0.008	Hau
45854.441	-6200	0.000	Hau
46173.502	-5529	0.012	Hau
46211.500	-5449	-0.028	Hau
46270.515	-5325	0.027	Hau
46373.221	-5109	0.028	Hau
46552.490	-4732	0.040	Hau
46610.435	-4610	-0.023	Hau
46640.382	-4547	-0.032	Hau
46641.377	-4545	0.012	Hau
46649.451	-4528	0.003	Hau
46650.380	-4526	-0.019	Hau
46679.400	-4465	-0.003	Hau
48801.492	-2	0.009	Hau
48802.438	0	0.004	Hau

References

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- Hoffmeister, C. 1967, Astron. Nachr. 290, 43 (1967AN....290...43H)
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