COMMISSIONS 27 AND 42 OF THE IAU
INFORMATION BULLETIN ON VARIABLE STARS

Number 5858

Konkoly Observatory
Budapest
4 November 2008

*HU ISSN 0374 – 0676*

# ELEMENTS FOR 10 RR LYRAE STARS

HÄUSSLER, K.[1]; BERTHOLD, T.[1,2]; KROLL, P.[2]

[1] Bruno-H.-Bürgel-Sternwarte, Töpelstr. 46, D-04746 Hartha, Germany

[2] Sternwarte Sonneberg, Sternwartestr. 32, D-96515 Sonneberg, Germany

email: info@sternwarte-hartha.de, tb@4pisysteme.de, pk@4pisysteme.de

These stars were discovered and reported to be of RR Lyrae type by Boyce & Huruhata (1942) and Hoffmeister (1966, 1967, 1968).

Except some remarks concerning the type of variability no further observations or ephemeris have been published until today.

Photographic plates of a field centered at $\alpha$ Oph, taken with the Sonneberg Observatory 40-cm Astrographs during three intervals spread over the years from 1964 to 1994, were used to investigate the behaviour of these objects (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 2. An extensive list holding the times of maxima derived can be retrieved as `5858-t3.txt`, using the link in the HTML version of this paper. Individual data are available upon request.

*Remarks:*

*V1064 Oph, V1074 Oph, V2028 Oph*
Brightness in minimum light beyond the plate limit.

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

References:

Boyce, E.H., Huruhata, M., 1942, *Harvard Annals*, **109**, 19
Hoffmeister, C., 1966, *Astron. Nachr.*, **289**, 1
Hoffmeister, C., 1967, *Astron. Nachr.*, **290**, 43
Hoffmeister, C., 1968, *Astron. Nachr.*, **290**, 277

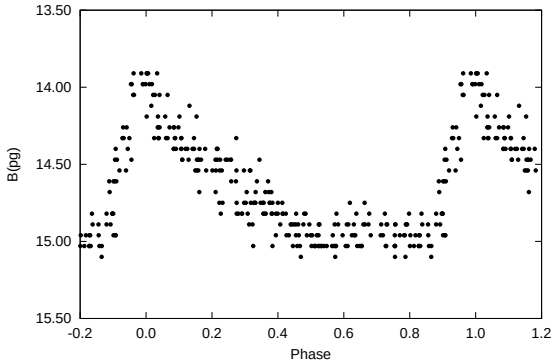


**Figure 1.** Light curve of V821 Oph

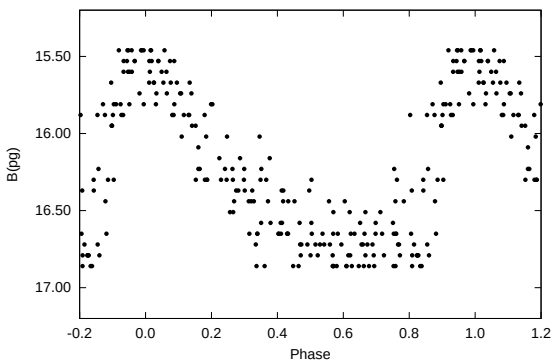


**Figure 2.** Light curve of V1062 Oph

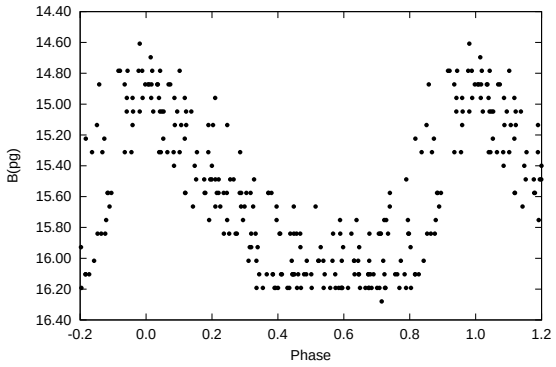


**Figure 3.** Light curve of V1064 Oph

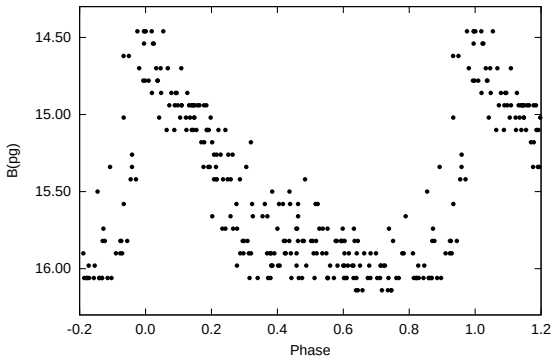


**Figure 4.** Light curve of V1074 Oph

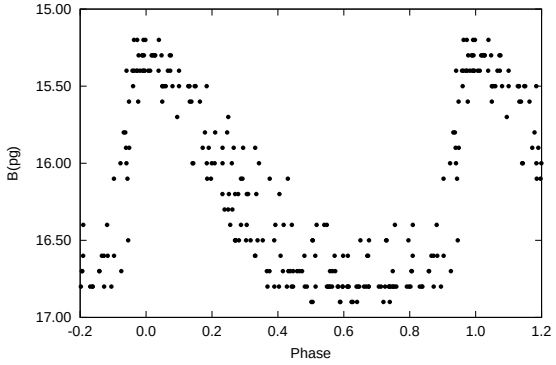


**Figure 5.** Light curve of V2023 Oph

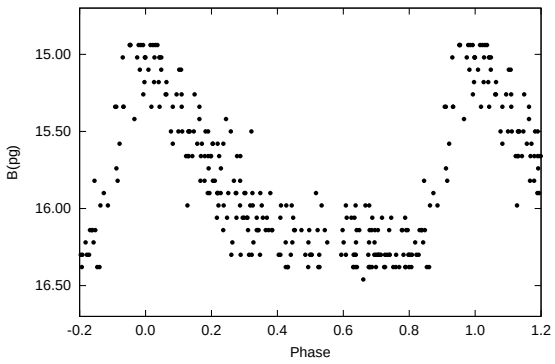


**Figure 6.** Light curve of V2026 Oph

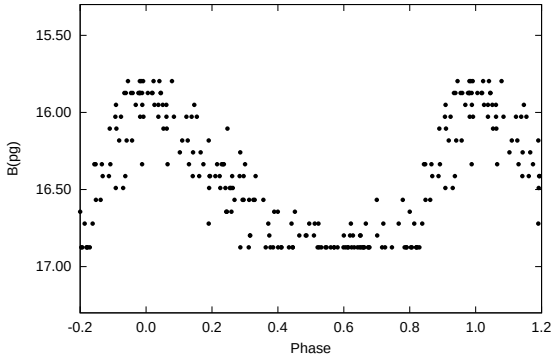


**Figure 7.** Light curve of V2028 Oph

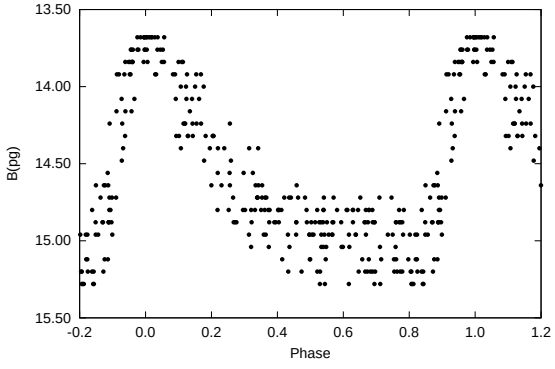


**Figure 8.** Light curve of NSV 9576

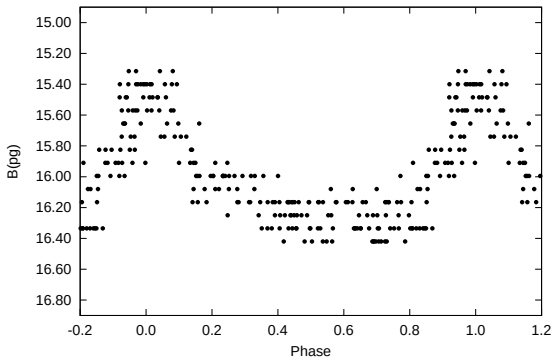


**Figure 9.** Light curve of NSV 9592

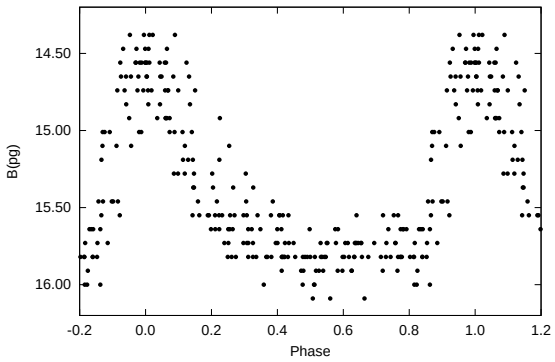


**Figure 10.** Light curve of NSV 9642

Table 1. Summary of this paper

| Star | Type | Epoch 2400000+ | Period (day) | Max. | Min. | $M-m$ | No. of Plates |
|---|---|---|---|---|---|---|---|
| V821 Oph | RRab | 49124.460 ±6 | 0.4678199 ±4 | $14\overset{m}{.}0$ | $15\overset{m}{.}0$ | $0\overset{p}{.}15$ | 268 |
| V1062 Oph | RRab | 49488.510 ±10 | 0.5265861 ±8 | $15\overset{m}{.}6$ | $16\overset{m}{.}8$ | $0\overset{p}{.}22$ | 212 |
| V1064 Oph | RRab | 49484.515 ±13 | 0.4173550 ±8 | $14\overset{m}{.}8$ | $>16\overset{m}{.}2$ | $0\overset{p}{.}20$ | 225 |
| V1074 Oph | RRab | 46991.385 ±5 | 0.3451787 ±4 | $14\overset{m}{.}6$ | $>16\overset{m}{.}1$ | $0\overset{p}{.}14$ | 240 |
| V2023 Oph | RRab | 49482.471 ±6 | 0.4559190 ±4 | $15\overset{m}{.}2$ | $16\overset{m}{.}8$ | $0\overset{p}{.}12$ | 212 |
| V2026 Oph | RRab | 49124.437 ±8 | 0.6650988 ±8 | $15\overset{m}{.}1$ | $16\overset{m}{.}3$ | $0\overset{p}{.}18$ | 247 |
| V2028 Oph | RRab | 49193.401 ±8 | 0.4702531 ±6 | $15\overset{m}{.}9$ | $>16\overset{m}{.}8$ | $0\overset{p}{.}20$ | 178 |
| NSV 9576 | RRab | 49475.471 ±6 | 0.5404488 ±5 | $13\overset{m}{.}7$ | $15\overset{m}{.}1$ | $0\overset{p}{.}18$ | 283 |
| NSV 9592 | RRab | 49482.446 ±12 | 0.5848983 ±11 | $15\overset{m}{.}4$ | $16\overset{m}{.}2$ | $0\overset{p}{.}18$ | 217 |
| NSV 9642 | RRab | 48839.403 ±7 | 0.4677834 ±5 | $14\overset{m}{.}5$ | $15\overset{m}{.}9$ | $0\overset{p}{.}18$ | 238 |

Table 2. Comparison stars and cross references

| | V821 Oph<br>HV 11039<br>USNO 0975-09664766 | | V1062 Oph<br>S 8618<br>USNO 0975-09287755 | |
|---|---|---|---|---|
| Comp. No. | USNO | $m^*$ | USNO | $m^*$ |
| 1 | 0975-09671874 | $13\overset{m}{.}8$ | 0975-09287344 | $15\overset{m}{.}3$ |
| 2 | 0975-09670349 | $14\overset{m}{.}0$ | 0975-09284917 | $16\overset{m}{.}1$ |
| 3 | 0975-09663688 | $14\overset{m}{.}8$ | 0975-09285925 | $16\overset{m}{.}5$ |
| 4 | 0975-09666335 | $15\overset{m}{.}6$ | 0975-09284030 | $16\overset{m}{.}9$ |

| | V1064 Oph<br>S 8621<br>USNO 0975-09393539 | | V1074 Oph<br>S 9829<br>USNO 0975-09803952 | |
|---|---|---|---|---|
| Comp. No. | USNO | $m^*$ | USNO | $m^*$ |
| 1 | 0975-09393991 | $14\overset{m}{.}8$ | 0975-09309205 | $13\overset{m}{.}7$ |
| 2 | 0975-09393013 | $15\overset{m}{.}3$ | 0975-09309459 | $14\overset{m}{.}1$ |
| 3 | 0975-09390228 | $15\overset{m}{.}8$ | 0975-09304972 | $14\overset{m}{.}8$ |
| 4 | 0975-09393505 | $16\overset{m}{.}4$ | 0975-09307002 | $15\overset{m}{.}2$ |

| | V2023 Oph<br>S 10339<br>USNO 0975-09537477 | | V2026 Oph<br>S 10343<br>USNO 0975-09650550 | |
|---|---|---|---|---|
| Comp. No. | USNO | $m^*$ | USNO | $m^*$ |
| 1 | 0975-09542893 | $15\overset{m}{.}1$ | 0975-09649513 | $14\overset{m}{.}8$ |
| 2 | 0975-09535757 | $15\overset{m}{.}5$ | 0975-09656802 | $15\overset{m}{.}5$ |
| 3 | 0975-09537864 | $16\overset{m}{.}2$ | 0975-09649101 | $16\overset{m}{.}0$ |
| 4 | 0975-09536233 | $16\overset{m}{.}9$ | 0975-09648330 | $16\overset{m}{.}8$ |

| | V2028 Oph<br>S 10346<br>USNO 0975-09754043 | | NSV 9576<br>S 8625<br>USNO 0975-09598276 | |
|---|---|---|---|---|
| Comp. No. | USNO | $m^*$ | USNO | $m^*$ |
| 1 | 0975-09748201 | $15\overset{m}{.}8$ | 0975-09606051 | $13\overset{m}{.}2$ |
| 2 | 0975-09750824 | $16\overset{m}{.}2$ | 0975-09605746 | $14\overset{m}{.}1$ |
| 3 | 0975-09754904 | $17\overset{m}{.}0$ | 0975-09596234 | $15\overset{m}{.}0$ |
| 4 | | | 0975-09599125 | $15\overset{m}{.}6$ |

| | NSV 9592<br>S 9818<br>USNO 0975-09612849 | | NSV 9642<br>HV 11040<br>USNO 0975-09668186 | |
|---|---|---|---|---|
| Comp. No. | USNO | $m^*$ | USNO | $m^*$ |
| 1 | 0975-09617524 | $15\overset{m}{.}1$ | 0975-09670412 | $14\overset{m}{.}0$ |
| 2 | 0975-09616192 | $15\overset{m}{.}5$ | 0975-09667180 | $15\overset{m}{.}1$ |
| 3 | 0975-09614978 | $16\overset{m}{.}2$ | 0975-09664470 | $15\overset{m}{.}8$ |

$^*$ Magnitudes refer to the $B$ values of the USNO−A2.0 catalogue