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**ELEMENTS FOR 8 RR LYRAE VARIABLES IN OPHIUCHUS**

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These stars were reported to be variable by Hoffmeister (1949, 1966, 1967, 1968) and Boyce and Huruata (1942). Except in the cases of V946 Oph and V2202 Oph (see details noted in the remarks below), no further observations or ephemeris have been published until today. Photographic plates of a field centered at 67 Oph, taken with the Sonneberg Observatory 40cm Astrographs during three intervals spread over the years from 1938 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 5703-t3.txt, using the link in the HTML version of this paper. Individual data are available upon request.

Table 1. Summary of this paper

Star	Type	Epoch 2400000+	Period (day)	Max.	Min.	M–m	No. of Plates
V946 Oph	RRab	49124.459 ±9	0.6398176 ±4	14 <sup>m</sup> 7	15 <sup>m</sup> 7	0 <sup>p</sup> 16	205
V1098 Oph	RRab	49475.496 ±10	0.5983190 ±5	14 <sup>m</sup> 6	16 <sup>m</sup> 3	0 <sup>p</sup> 18	164
V2031 Oph	RRab	45913.374 ±7	0.2616933 ±2	15 <sup>m</sup> 0	16 <sup>m</sup> 0	0 <sup>p</sup> 20	181
V2079 Oph	RRba	48801.491 ±6	0.4675631 ±4	14 <sup>m</sup> 7	16 <sup>m</sup> 2	0 <sup>p</sup> 16	193
V2082 Oph	RRab	49488.572 ±8	0.6655856 ±6	15 <sup>m</sup> 1	15 <sup>m</sup> 8	0 <sup>p</sup> 12	204
V2084 Oph	RRab	49215.391 ±8	0.5152199 ±4	15 <sup>m</sup> 3	16 <sup>m</sup> 4	0 <sup>p</sup> 19	149
V2086 Oph	RRab	49154.514 ±6	0.5432653 ±3	14 <sup>m</sup> 1	15 <sup>m</sup> 5	0 <sup>p</sup> 16	250
V2202 Oph	RRab	48801.508 ±10	0.5924134 ±6	15 <sup>m</sup> 4	16 <sup>m</sup> 3	0 <sup>p</sup> 16	146

Table 2. Comparison stars and cross references

V946 Oph S 4197 USNO 0900-11245172			V1098 Oph S 9875 USNO 0900-12249834	
Comp. No.	GSC	m*	USNO	m*
1	0900-11242067	14 <sup>m</sup> 9	0900-12252310	14 <sup>m</sup> 7
2	0900-11243430	15 <sup>m</sup> 1	0900-12245301	15 <sup>m</sup> 2
3	0900-11248377	15 <sup>m</sup> 7	0900-12239936	16 <sup>m</sup> 0
V2031 Oph S 10354 USNO 0900-10975013			V2079 Oph S 9266 USNO 0900-10982172	
Comp. No.	USNO	m*	USNO	m*
1	0900-10979371	14 <sup>m</sup> 8	0900-10982884	13 <sup>m</sup> 3
2	0900-10983694	15 <sup>m</sup> 4	0900-10988752	15 <sup>m</sup> 1
3	0900-10971449	15 <sup>m</sup> 8	0900-10983912	15 <sup>m</sup> 4
4			0900-10985378	16 <sup>m</sup> 0
V2082 Oph S 9848 USNO 0900-11067505			V2084 Oph S 9856 USNO 0900-11418565	
Comp. No.	USNO	m*	USNO	m*
1	0900-11065091	15 <sup>m</sup> 0	0900-11416873	15 <sup>m</sup> 0
2	0900-11075451	15 <sup>m</sup> 3	0900-11414437	15 <sup>m</sup> 5
3	0900-11066645	15 <sup>m</sup> 3	0900-11416503	15 <sup>m</sup> 6
4	0900-11067909	16 <sup>m</sup> 0	0900-11420016	16 <sup>m</sup> 4
V2086 Oph S 9296 USNO 0900-11817170			V2202 Oph HV 11035 USNO 0900-10462979	
Comp. No.	USNO	m*	USNO	m*
1	0900-11805844	14 <sup>m</sup> 0	0900-10459019	15 <sup>m</sup> 3
2	0900-11822141	14 <sup>m</sup> 1	0900-10466769	16 <sup>m</sup> 0
3	0900-11809655	15 <sup>m</sup> 1	0900-10464279	16 <sup>m</sup> 1
4	0900-11818657	15 <sup>m</sup> 5		

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

*Remarks:*

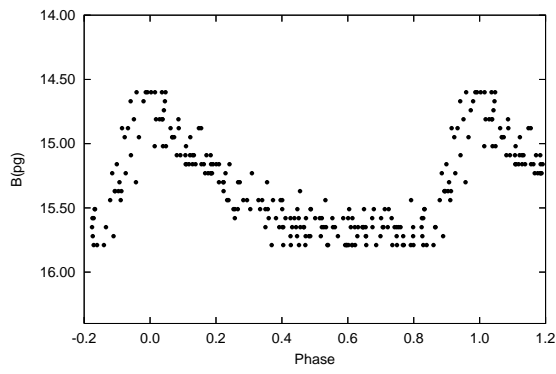
*V946 Oph*

The period previously published by of Götz et al. (1957) and cited in the GCVS is erroneous. The brightest maxima published by Götz et al. were included in our period analysis.

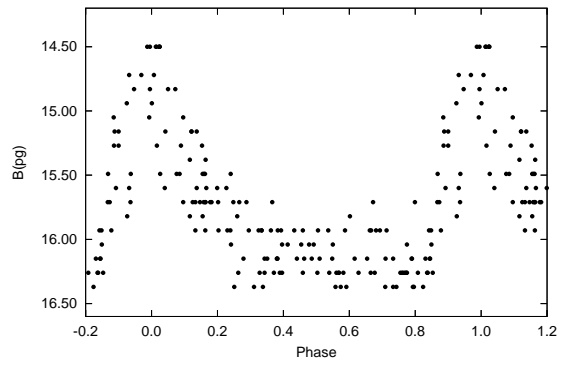
*V2202 Oph*

The brightest observation published in the paper of Hoffmann (1981) was included in the period analysis.

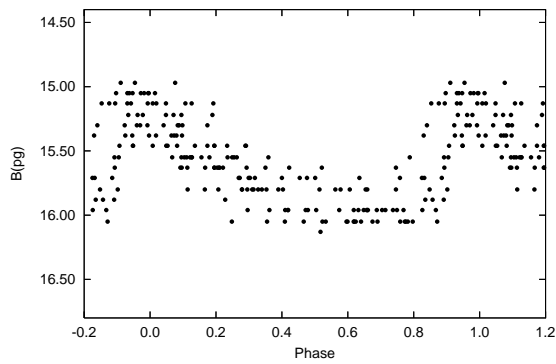
This research made use of the SIMBAD data base, operated by the CDS at Strasbourg, France.



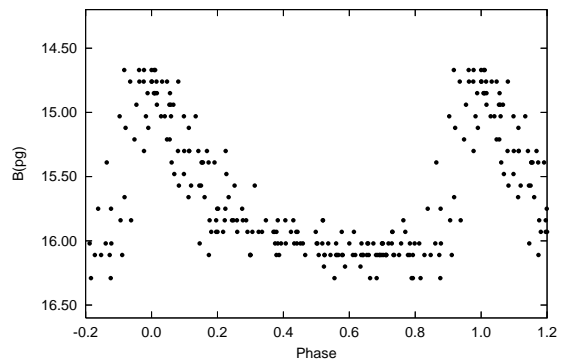
**Figure 1.** Light curve of V946 Oph



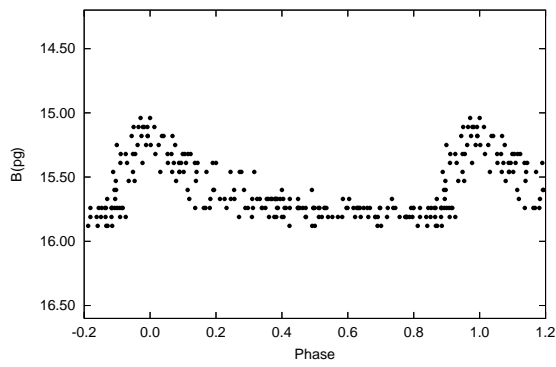
**Figure 2.** Light curve of V1098 Oph



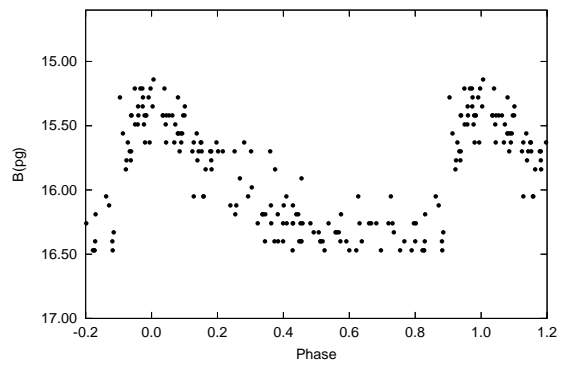
**Figure 3.** Light curve of V2031 Oph



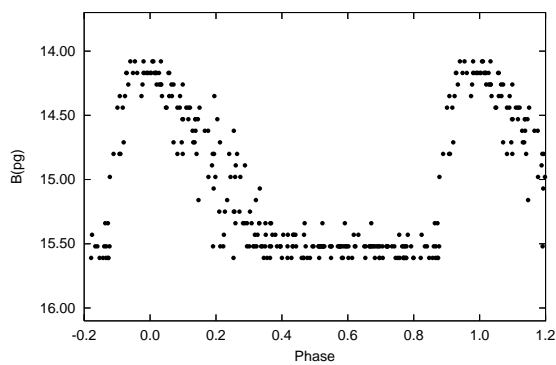
**Figure 4.** Light curve of V2079 Oph



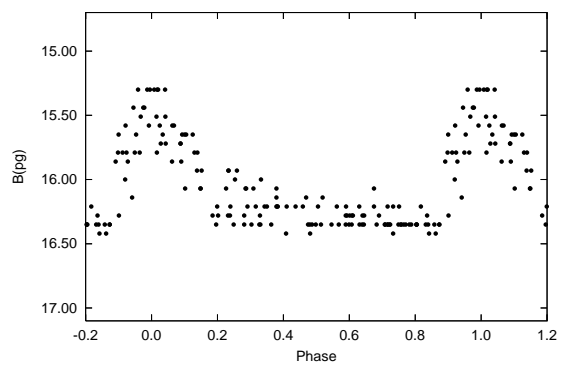
**Figure 5.** Light curve of V2082 Oph



**Figure 6.** Light curve of V2084 Oph



**Figure 7.** Light curve of V2086 Oph



**Figure 8.** Light curve of V2202 Oph

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