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ELEMENTS FOR FOUR RED PULSATING STARS

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The variability of these stars was discovered on Sonneberg Observatory photographic plates by Hoffmeister (1967a,b) and Morgenroth (1934), respectively; 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.

Remarks:

V548 Her

Period varies; elements valid for J.D. 2437100-2440750 and J.D. 2442900-2449500, respectively. The period varies strongly but the shape of the light curve is rather stable.

V2066 Oph

Probably variable period; elements given are valid for J.D. 2437100-2449500. Including the first observed maximum (published by Hoffmeister) in a common ephemeris results in distinct larger scatter of the light curve and has been avoided for this reason.

NSV 7865

SRa type with respect of the relatively small amplitude.

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

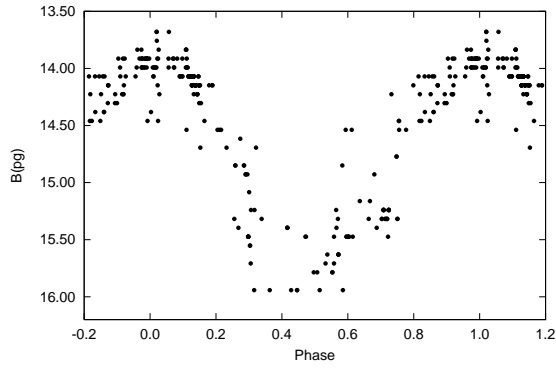


Figure 1. Combined light curve of V548 Her

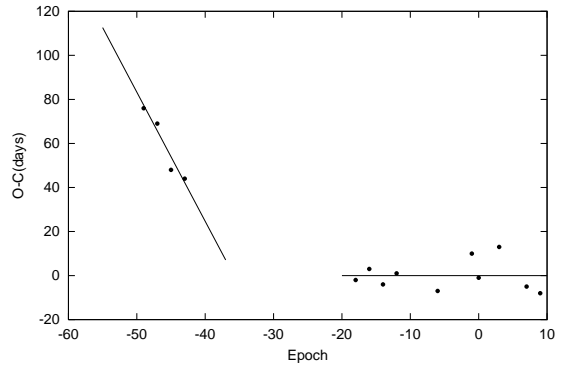


Figure 2. (O-C) diagram of V548 Her

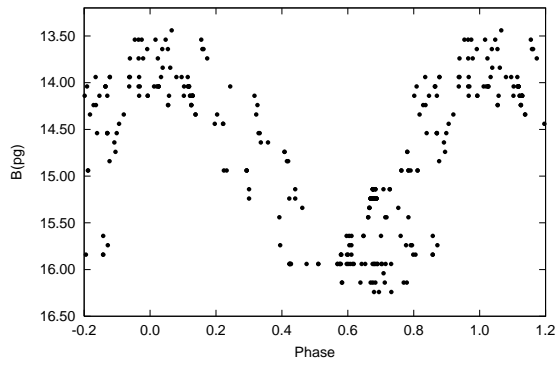


Figure 3. Light curve of V2066 Oph

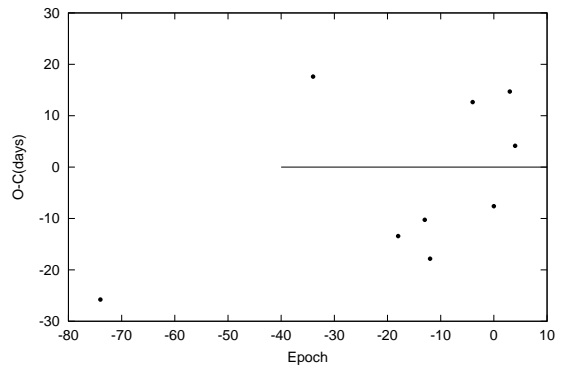


Figure 4. (O-C) diagram of V2066 Oph

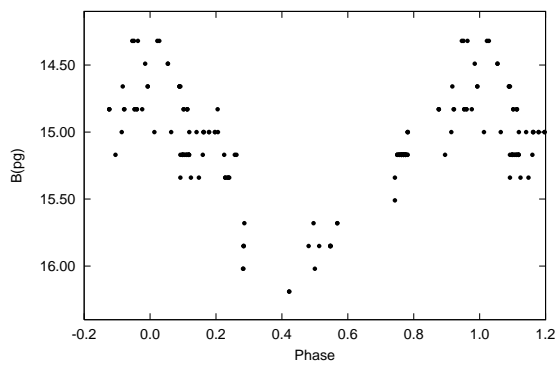


Figure 5. Light curve of NSV 7865

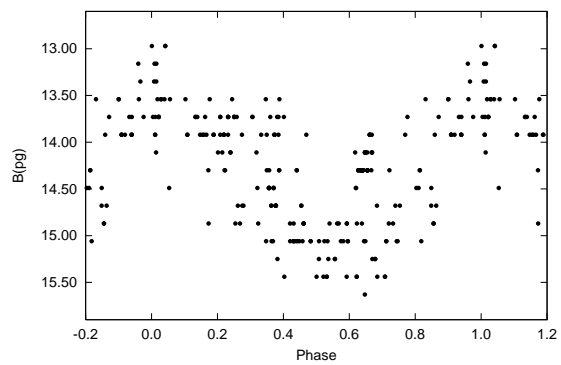


Figure 6. Light curve of NSV 8293

Table 1. Summary of this paper

Star	Type	Epoch 2400000+	Period (day)	Max.	Min.	M–m	No. of Plates	Former classification
V548 Her(1)	M	38528.7 ±3.9	184.35 ±1.05	13 ^m 7	15 ^m 8	0 ^p 45	77	M:
V548 Her(2)	M	47771.6 ±2.8	190.21 ±.27				166	
V2066 Oph	M	48363.6 ±6.7	278.57 ±.44	13 ^m 6	16 ^m 1	0 ^p 34	239	Isb:
NSV 7865	M:	46609.2 ±3.4	157.09 ±.17	14 ^m 3	16 ^m 0	0 ^p 50	134	LB:
NSV 8239	SRa	38501.4 ±2.6	144.46 ±.06	13 ^m 2	15 ^m 3		242	L

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

Star	JD (max.)	Epoch	$O - C$	Star	JD (max.)	Epoch	$O - C$
V548 Her(1)	38528	0	-1.0	V2066 Oph	47262	-4	12.6
	38901	2	3.3		48356	0	-7.6
	39261	4	-5.4		49214	3	14.7
	39637	6	1.9		49482	4	4.1
V548 Her(2)	44345	-18	-3.2	NSV 7865	39537	-45	-2.95
	44732	-16	3.4		42987	-23	-8.9
	45104	-14	-5.1		44266	-15	13.3
	45491	-12	1.52		44732	-12	8.1
	46623	-6	-7.7		45822	-5	-1.55
	47592	-1	10.2		46613	0	4.0
	47770	0	-2.0		46917	2	-6.2
	48356	3	13.4		48804	14	-4.3
	49098	7	-5.5				
49475	9	-8.9	NSV 8293	38501.5	0	0.1	
				38640.3	1	-5.6	
V2066 Oph	27724*	-74		-25.7	38937.4	3	2.6
	38910	-34		17.6	45003.7	45	1.6
	43336	-18		-13.3	45441.5	48	6.0
	44732	-13	-10.3	46592.5	56	1.3	
45003	-12	-17.8	49475.5	76	-4.9		

* Maximum published by Hoffmeister (1967a)

Table 3. Comparison stars and cross references

		V548 Her		V2066 Oph	
		S 9722		S 9621	
		GSC 962.0113		GSC 979.0217	
Comp. No.	GSC	m*	GSC	m*	
1	962.0138	13 ^m 9	979.2000	14 ^m 4	
2	962.0208	14 ^m 0	966.1832	15 ^m 0	
3	962.0971	14 ^m 8	966.1908	15 ^m 4	
4	962.1444	14 ^m 9	966.1960	16 ^m 1	
5	962.0136	15 ^m 3			
6	962.0141	16 ^m 2			

		NSV 7865		NSV8293	
		S 9788		69.1934	
		GSC 961.0982		GSC 977.0665	
Comp. No.	GSC	m*	GSC	m*	
1	961.0907	14 ^m 3	977.0824	12 ^m 4	
2	961.1584	15 ^m 4	977.0674	14 ^m 2	
3	961.0312	16 ^m 0	977.0561	15 ^m 4	

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

References:

- Hoffmeister, C., 1967a, *Astron. Nachr.*, **289**, 205
Hoffmeister, C., 1967b, *Astron. Nachr.*, **290**, 43
Morgenroth, O., 1934, *Astron. Nachr.*, **252**, 389