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ELEMENTS FOR 8 ECLIPSING BINARIES

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These stars were discovered and reported to be variable by Boyce & Huruhata (1942) and Hoffmeister (1930, 1949, 1967). Photographic plates of fields centered around α Oph and 67 Oph resp., taken with the Sonneberg Observatory 40cm Astrographs during three intervals spread over the years from 1938–1994, were used to check 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 minima derived can be retrieved as `5847-t3.txt`, using the link in the HTML version of this paper. Individual data are available upon request.

Remarks:

V415 Oph

Published times of minimum light by Hoffmeister (1930, the faintest observation only), Meinunger (1966) and Paschke (see Diethelm, 2004) were included in our analysis.

V760 Oph

First elements (now contained in the GCVS) derived from four minima observed by Mandel and published by Tsessevich (1960) have been found to be wrong. The four times of minimum light published there were included in this analysis.

V947 Oph

First elements (now contained in the GCVS) published by Götz et al. (1957) have been found to be erroneous. The ASAS database contains only 97 measurements of this star. Three very faint ones were used as times of minimum light and included in this analysis.

V968 Oph

Both type and period previously published by of Götz et al. (1957) and cited in the GCVS are erroneous. The same applies to the values given in the paper of Kraus (2007).
The period varies. Elements valid for J.D. 2429100-2447500 and J.D. 2447500-2449500 (at least, end of observations) resp.

NSV 9840

Further investigation is needed to confirm the existence as well as the duration (d=0^p04:) of a possible phase of constant brightness in the middle of the minimum.

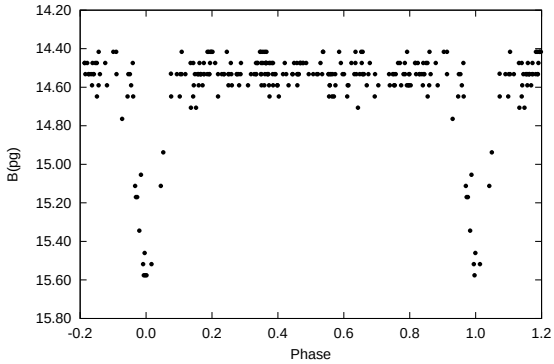

Figure 1. Light curve of V415 Oph

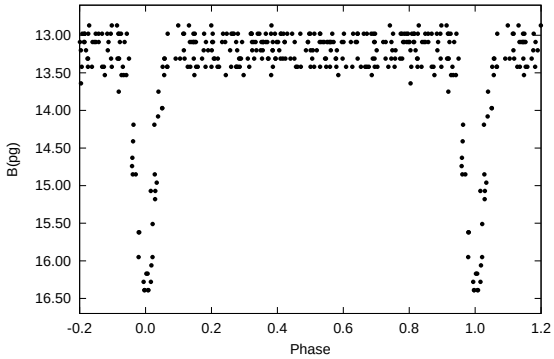

Figure 2. Light curve of V760 Oph

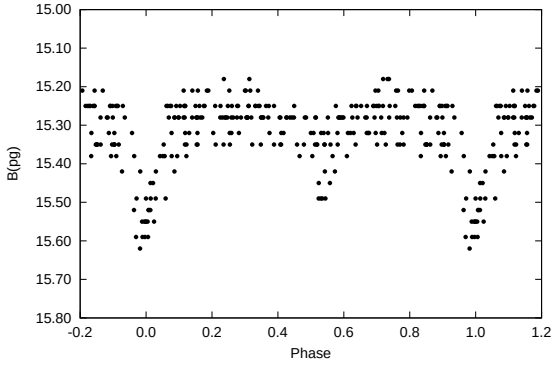

Figure 3. Light curve of V947 Oph

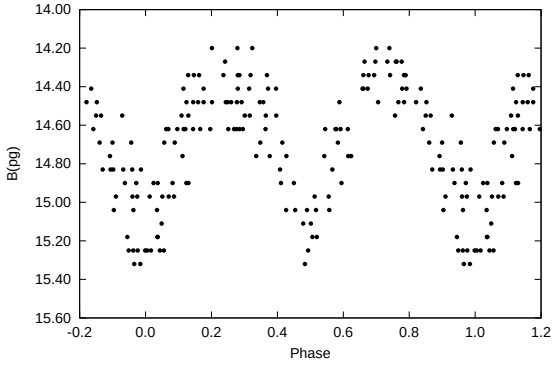

Figure 4. Composite light curve of V968 Oph

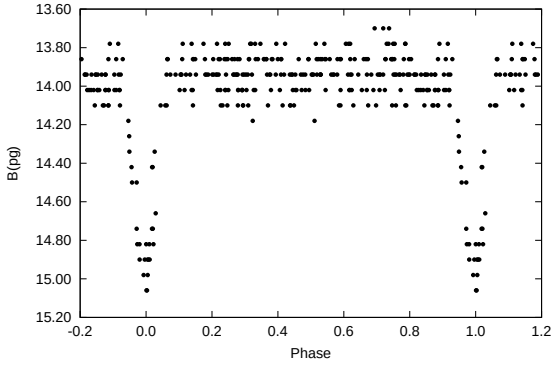

Figure 5. Light curve of NSV 8869

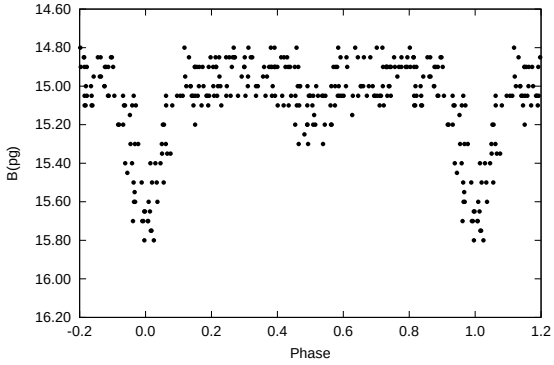

Figure 6. Light curve of NSV 8970

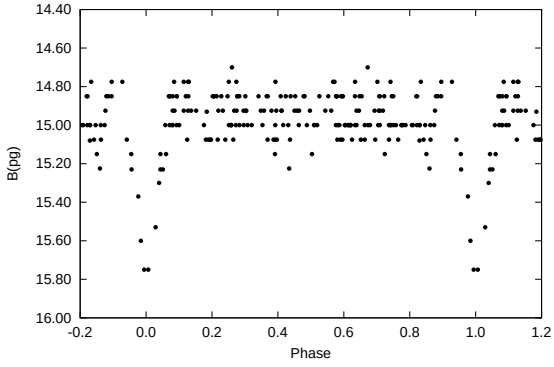

Figure 7. Light curve of NSV 9740

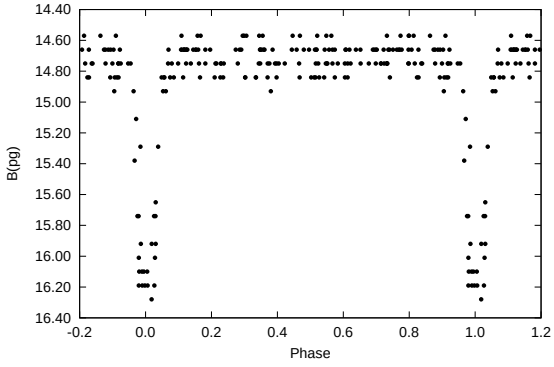

Figure 8. Light curve of NSV 9840

Table 1. Summary of this paper

Star	Type	Epoch 2400000+	Period (day)	Max.	Min.I	Min. II	D	No. of Plates
V415 Oph	EA	52825.470 ±16	2.5371464 ±28	$14^{m}.5$	$15^{m}.5$		$0^{p}.16$	221
V760 Oph	EA	49193.468 ±10	1.5615272 ±21	$13^{m}.2$	$16^{m}.4$		$0^{p}.13$	292
V947 Oph	E	53571.689 ±4	0.7977454 ±2	$15^{m}.25$	$15^{m}.60$	$15^{m}.45$		263
V968 Oph (1)	E	46609.479 ±10	0.7233397 ±7	$14^{m}.3$	$15^{m}.2$	$15^{m}.2$		125
V968 Oph (2)	E	49215.440 ±22	0.7232656 ±199					32
NSV 8869	EA	49133.418 ±8	1.4340859 ±19	$13^{m}.9$	$15^{m}.0$		$0^{p}.17$	283
NSV 8970	EB	49213.347 ±25	2.504273 ±11	$14^{m}.9$	$15^{m}.7$	$15^{m}.2$		268
NSV 9740	EA	47392.363 ±26	2.0421460 ±87	$14^{m}.9$	$15^{m}.7$	$15^{m}.0$:	$0^{p}.15$	202
NSV 9840	EA	49124.518 ±47	5.254049 ±48	$14^{m}.7$	$16^{m}.2$		$0^{p}.16$	196

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

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Table 2. Comparison stars and cross references

	V415 Oph 176.1929 USNO 0900-11244760		V760 Oph HV 10937 USNO 0975-09180391	
Comp. No.	GSC	m*	USNO	m*
1	0900-11246767	$14^{m}.2$	0975-09174322	$13^{m}.2$
2	0900-11255289	$14^{m}.9$	0975-09177551	$14^{m}.3$
3	0900-11252628	$15^{m}.2$	0975-09175192	$14^{m}.9$
4	0900-11245022	$15^{m}.8$	0975-09177416	$17^{m}.3$

	V947 Oph S 4199 USNO 0958-0324966		V968 Oph S 4226 USNO 0900-12423939	
Comp. No.	USNO	m*	USNO	m*
1	0958-0324686	$15^{m}.35$	0900-12425730	$14^{m}.4$
2	0958-0324901	$15^{m}.76$	0900-12436022	$14^{m}.5$
3			0900-12436022	$15^{m}.0$
4			0900-12429616	$15^{m}.6$

	NSV 8869 HV 10948 USNO 0975-09260589		NSV 8970 HV 10956 USNO 0975-09289484	
Comp. No.	USNO	m*	USNO	m*
1	0975-09256163	$14^{m}.2$	0975-09285269	$15^{m}.0$
2	0975-09258315	$14^{m}.3$	0975-09286902	$15^{m}.1$
3	0975-09255998	$15^{m}.2$	0975-09292729	$15^{m}.5$
4			0975-09290674	$15^{m}.9$

	NSV 9740 S 9838 USNO 0900-10650673		NSV 9840 S 9831 USNO 0975-09921950	
Comp. No.	USNO	m*		
1	0900-10654081	$14^{m}.9$	0975-09915079	$14^{m}.5$
2	0900-10655451	$15^{m}.2$	0975-09916596	$14^{m}.6$
3	0900-10656993	$15^{m}.8$	0975-09924115	$15^{m}.3$
4			0975-09923676	$16^{m}.1$

* Magnitudes refer to the B values of the USNO−A2.0 catalogue except for V947 Oph. USNO−B1.0 was used for this star due to the lack of appropriate objects in the other catalogue