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

Number 3709

Konkoly Observatory
Budapest
14 April 1992

HU ISSN 0374 - 0676

BINARIES IN THE VICINITY OF THE OPEN CLUSTER IC 4665: II. V 2203 Oph

The investigation of the eclipsing variable V 2203 Oph is a continuation of our programme for studying binaries in the wide vicinity of the open cluster IC 4665 (Kraicheva et al., 1989).

V 2203 Oph was discovered by Zinner (1952). Later Stiegler has found rapid light variations between $10^m.9$ and $12^m.2$ on the basis of 33 photographic observations. Using 184 plates taken with the 40-cm astrograph of the Crimean Station of Sternberg Institute, Moscow, in time interval JD 2442812 - 44021, Surikov (1982) classified the star as a W UMa variable with a period P = $0^d.455001$ and light variations between $11^m.56$ and $11^m.94$, Min II $11^m.80$.

Our observations of V 2203 Oph, total number 239, in time interval JD 2444402 - 7056, were performed at the National Astronomical Observatory "Rozhen". 230 plates were taken on 50/70-cm Schmidt telescope, 9 on 2-m RCC telescope and 7 photoelectric observations with 60-cm telescope were added. Photometric measurements of the plates were carried out with the automatic iris photometer Ascoris (Carl Zeiss, Jena) at the National Observatory "Rozhen". The magnitude evaluations of some plates were made by Nijland - Blazhko method. We used Surikov's comparison stars, but our B magnitudes determined with the iris photometer are systematically smaller. These magnitudes together with the identification chart are shown in Figure 1. The measurements were based on the standard stars in cluster IC 4665 (Kazanasmas et al., 1982). UBV magnitudes of comparison stars a, b and c were measured also photoelectrically. Star No.42 was used as a check star, and No.46 as a standard one. The results are given in Table I.

The results confirm V 2203 Oph as an eclipsing binary of W UMa type. A more precise value of the period of light variations was determined: P = $0^d.4550021$. Our observations, together with those of Surikov cover 9326 cycles. The element of light variations

$$\mathrm{Min}_{\mathrm{hel}}\,\mathrm{I} = \mathrm{JD}\ 2442812.645 + 0^d.4550021\mathrm{E}$$

satisfy well all observations between JD 2442812 and JD 2447056. During

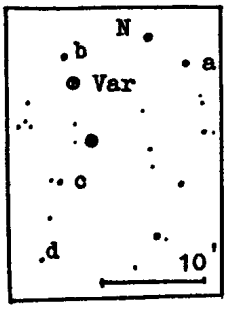

Figure 1

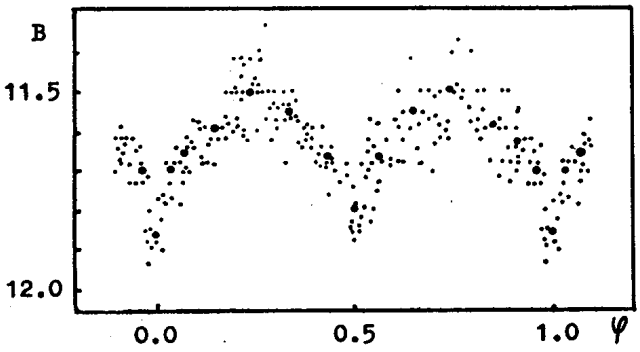

Figure 2

Table 1

	B		V	B-V	U-B
a	11.16	a	10.530	0.634	0.163
b	11.50	b	10.860	0.639	0.111
c	11.85	c	11.411	0.439	0.177
d	12.12				

this interval the period has been unchanged.

The mean light curve of V 2203 Oph from "Rozhen" observations is presented in Figure 2 together with the individual observational data. The amplitude of the light variations was found to be $0^m.36$ ($11^m.50$-$11^m.86$), Min II $11^m.80$.

More observations of V 2203 Oph during a longer time interval are needed for studying possible variability of the period, which is a characteristic feature for W UMa type stars.

Table 2

JD_{hel} 244..	B	JD_{hel} 244..	B	JD_{hel} 244..	B	JD_{hel} 244..	B
4402.459	11.62	4760.529	11.64	5139.471	11.59	5880.416	11.57
.548	11.50	.547	11.64	171.465	11.50	.444	11.64
403.457	11.33	.548	11.64	172.331	11.59	.468	11.64
.549	11.68	.549	11.71	.421	11.59	.508	11.71
427.420	11.73	.550	11.64	173.397	11.64	881.431	11.58
428.446	11.50	.551	11.64	175.488	11.68	906.356	11.53
429.396	11.50:	761.369	11.64	195.361	11.68	.390	11.64
.425	11.52	.409	11.93	.389	11.50	.450	11.57
.455	11.68:	.476	11.63	196.343	11.60	.478	11.50
430.404	11.74	.480	11.59	203.316	11.59	.507	11.50
.440	11.62	762.423	11.50	224.394	11.77:	908.519	11.57
.462	11.55	.467	11.50	226.304	11.50	936.349	11.50
455.373	11.59	779.360	11.76	437.486	11.59	995.252	11.62
.454	11.75	.398	11.85	.513	11.59	6181.546	11.68
456.383	11.68:	780.365	11.42	461.389	11.58	.565	11.42
.424	11.50	.407	11.59	.414	11.68	183.440	11.68
458.376	11.73	781.347	11.57	.437	11.68	.470	11.64
722.452	11.62	783.358	11.48	468.443	11.68	199.409	11.68
.490	11.68	.373	11.59	526.364	11.50	.443	11.90
724.430	11.62:	.408	11.50	554.350	11.50	.472	11.68
.514	11.50	.442	11.50	878.363	11.50	.503	11.59
725.397	11.50:	789.338	11.57	.388	11.59	200.427	11.59
.436	11.68	823.394	11.50	.413	11.65	.453	11.63
.473	11.88	5109.388	11.49	.438	11.71	.483	11.37
.483	11.78	.436	11.59	.463	11.73	.509	11.59
.486	11.68	.470	11.62	.486	11.71	227.532	11.50
.493	11.68	.507	11.68	.510	11.62	262.445	11.68:
.500	11.70	110.407	11.68	.535	11.60	286.384	11.73:
.507	11.68	.435	11.66	879.351	11.85	.410	11.68
757.357	11.68	.470	11.59	.376	11.77	.435	11.55
760.431	11.50	.500	11.42	.404	11.58	.456	11.62
.468	11.64	111.506	11.59	.431	11.62	287.344	11.68
.494	11.64	.524	11.73	.457	11.60	.374	11.62
.501	11.80:	112.459	11.68	.482	11.55	.412	11.62
.508	11.77:	.491	11.64	.511	11.56	288.333	11.68
.515	11.82	.525	11.64	880.341	11.59	.363	11.67
.522	11.70	139.441	11.60	.365	11.46	.388	11.68

Table 2 (cont.)

JD_{hel} 244..	B	JD_{hel} 244..	B	JD_{hel} 244..	B	JD_{hel} 244..	B
6289.414	11.61	6554.494	11.57	6623.410	11.57	6997.429	11.62
291.305	11.62	.520	11.68	.434	11.53	998.325	11.48
.339	11.70	.545	11.63	.457	11.59	.345	11.53
293.366	11.70	.568	11.88	.481	11.68	.373	11.63
.392	11.68	.589	11.76	.505	11.71	.397	11.66
294.349	11.73	557.536	11.83	.530	11.65	7000.369	11.58
.375	11.59	.538	11.84	625.512	11.73	003.365	11.56
.400	11.58	.543	11.85	.536	11.62	032.368	11.70
295.348	11.50	.546	11.83	626.429	11.62	.394	11.63
.373	11.50	583.493	11.83	.449	11.73	033.324	11.56
.398	11.62	586.536	11.42	.498	11.68	.357	11.48
296.357	11.68	.561	11.50	.525	11.67	.420	11.61
.382	11.62	587.368	11.78	645.403	11.57	034.384	11.78
.408	11.68	.392	11.68	671.364	11.58	.405	11.80
317.328	11.68	.418	11.62	.381	11.56	038.345	11.52
.353	11.62	.432	11.57	672.308	11.50	040.432	11.40
320.373	11.42	.453	11.47	.331	11.62	054.309	11.65
321.310	11.68	.477	11.57	.383	11.68	.332	11.56
345.234	11.62	588.483	11.85	.419	11.89	055.328	11.70
.266	11.85	.531	11.68	.432	11.78	.324	11.58
554.441	11.57	.563	11.50	880.590	11.88	.349	11.51
.469	11.50	601.453	11.90	.600	11.82	056.374	11.58
.491	11.54	618.412	11.54	997.400	11.62		

M. POPOVA, V. POPOV, Z. KRAICHEVA, A. ANTOV

Department of Astronomy,
Bulgarian Academy of Sciences
72 Trakia blvd, Sofia 1784,
Bulgaria

References:

Kazanasmas, M., Zaverneva, L., Tomak, L.: 1982, Atlas and Catalogue of Photoelectric Standards, Kiev
Kraicheva, Z., Popova, M., Antov, A.: 1989, Astr. Nachr., 310, H3, 227.
Stiegler, Z.: Information Bank Var. Stars, Sternberg Inst., Moscow
Surikov, O.G.: 1982, Per. Zvezdy Suppl., No.20, 253.
Zinner, E.: 1952, Astr. Nachr., 281, H1, 16.