

PHOTOELECTRIC OBSERVATIONS OF
 VV Ori IN R AND I

VV Ori (BD-1°943) is a β Lyr type eclipsing binary, consisting of two main sequence stars of spectral type B.

The observations were performed during 55 nights between December 1990 and February 1994. The total number of observations obtained are 2692 points for each color (Table 1).

Throughout the author's observations, HR 1873 (BD-1°949, sp=B3V) was used as the comparison star and HR 1861 (BD-1°935, sp=B1V) was used as a check star, which are the same ones as used in the previous work by Duerbeck (1975). However, from the author's observations it was found that HR 1873 abruptly changed its brightness in January 1992.

The constancy of the star HR 1861 was verified by Huffer and Kopal (1951), Duerbeck (1975) and Chambliss (1982). All the observations have been transformed to Johnson's standard system. The obtained light and color curves in R and I between 1993 and 1994 are shown in Figure 1.

The obtained new times of minima and previous ones derived by other authors (see Duerbeck, 1975) are shown in Table 2. We have obtained the new light elements:

$$\text{Min I(Hel J.D.)} = 2440890.5112 + 1^d 48537752 \times E$$

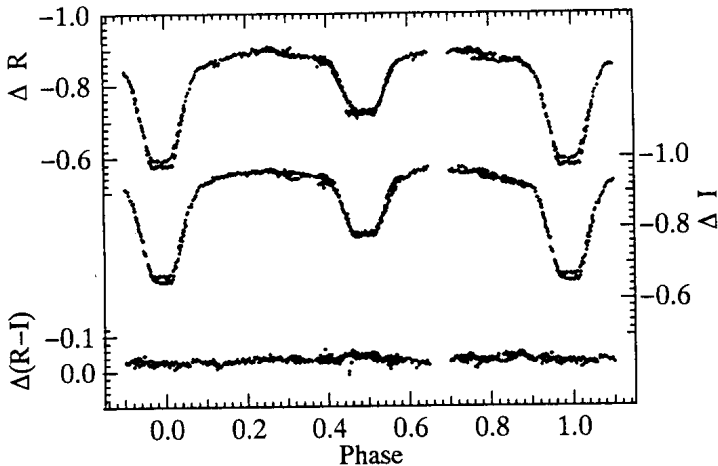


Figure 1. Light and color curves of VV Ori

Table 1. The data of present observations (VV Ori)

Season	Nights	Data points	minima I	minima II
1990 Dec. – 1991 Feb.	11	449	2	0
1991 Nov. – 1992 Feb.	15	755	0	1
1992 Nov. – 1993 Feb.	18	844	1	2
1993 Nov. – 1994 Feb.	11	644	2	2

Table 2. New times of minima of VV Ori

Year	J.D. (Hel.)	E	O – C	Author
	24...			
1913	19836.021	-14174.5	-0.007	Daniel
1913	20095.2218	-14000	-0.0041	Hertzsprung
1922	23401.680	-11774	0.004	Stearns
1930	26035.251	-10001	0.000	Zverev
1931	26387.282	-9764	-0.003	Dufay
1934	27443.3878	-9053	-0.0007	Martin
1934	27464.184	-9039	0.000	Schneller
1938	29225.849	-7853	0.008	Wood
1938	29234.756	-7847	0.002	Wood
1939	29307.539	-7798	0.002	Wood
1939	29335.758	-7779	-0.002	Wood
1969	40545.899	-232	-0.005	Atkins
1973	42041.6826	775	0.0038	Duerbeck
1976	42788.8291	1278	0.0054	Chambliss
1976	42791.8018	1280	0.0074	Chambliss
1976	42794.7704	1282	0.0052	Chambliss
1976	42803.6832	1288	0.0058	Chambliss
1978	43510.7218	1764	0.0047	Chambliss
1990	48249.0735	4954	0.0021	Arai
1990	48255.0144	4958	0.0014	Arai
1992	48636.0120	5214.5	-0.0003	Arai
1992	48962.0520	5434	-0.0007	Arai
1992	48982.1030	5447.5	-0.0023	Arai
1992	48988.0447	5451.5	-0.0021	Arai
1993	49320.0262	5675	-0.0024	Arai
1993	49337.1077	5686.5	-0.0028	Arai
1993	49340.0805	5688.5	-0.0007	Arai
1994	49372.0115	5710	-0.0053	Arai

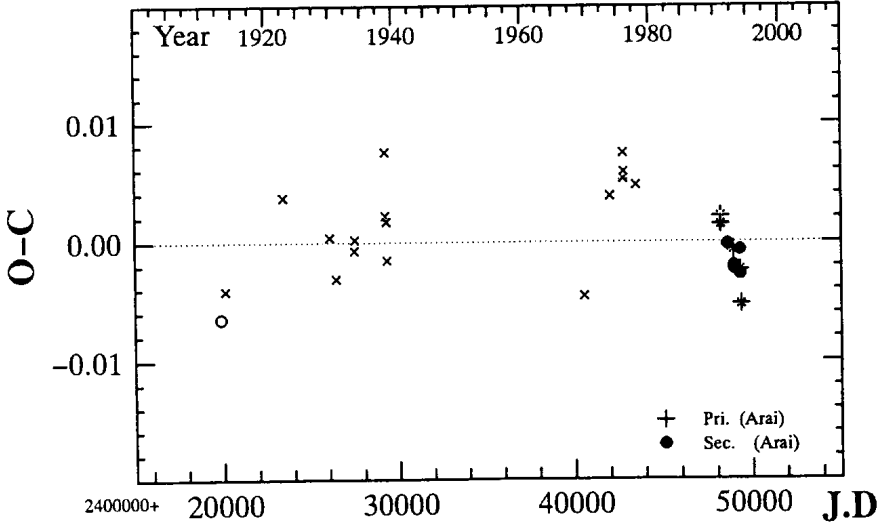


Figure 2. O-C diagram of VV Ori (1913-1994)

Table 3. ΔR , ΔI and $\Delta (R-I)$ values of VV Ori at maxima and minima

phase	Year	ΔR	ΔI	$\Delta (R-I)$
maxima I	1991	-0.879	-0.835	-0.044
	1992	-0.886	-0.858	-0.028
	1993	-0.880	-0.849	-0.031
	1994	-0.900	-0.864	-0.035
minima I	1991	-0.577	-0.557	-0.020
	1992	-0.580	-0.562	-0.018
	1993	-0.580	-0.552	-0.028
	1994	-0.586	-0.557	-0.029
maxima II	1991	-0.902	-0.869	-0.033
	1992	-0.876	-0.843	-0.033
	1993	-0.896	-0.849	-0.047
	1994	-0.895	-0.857	-0.038
minima II	1991	-0.730	-0.693	-0.037
	1992	-0.725	-0.690	-0.036
	1993	-0.723	-0.682	-0.041
	1994	-0.727	-0.682	-0.045

Figure 2 shows the O–C diagram where the data of other authors are also plotted. Table 3 shows the variations of ΔR , ΔI at maxima and minima respectively.

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¹JAPOA: Japan Amateur Photoelectric Observers Association