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PHOTOELECTRIC OBSERVATION OF VW CEPHEI IN R AND IR

VW Cep (BD+75<sup>o</sup>0752) is a W UMa-type eclipsing binary remarkable for peculiar variation of its light curve for which Yamasaki (1982) suggested a spot model. So far observations in UBV have been often made by various authors (e.g., Abe 1982, Karimie 1983), but only few red and infrared observation have been published (e.g., Linnell 1982). Red and infrared observation of VW Cep would be important to study the validity of the spot model. The present observation is to consolidate the red and infrared data of VW Cep.

Our observations were carried out during nine nights in December 1989 and January 1990 with an SSP-3 detector attached to a 28-cm (f=2,800mm) Schmidt-Cassegrain type telescope. Two filters with peak transmission at 670nm for red and 880nm for infrared were used throughout the observations. BD+74<sup>o</sup>889 was used as the comparison star, which is the same one as used in the previous works (e.g., Karimie 1983, Linnell 1982).

The present observations could cover four primary and two secondary minima, as shown in Table I, where the O-C values were calculated with the ephemeris:

$$\text{Min I} = \text{JD Hel } 2444157.4131 + 0.27831460 \cdot E$$

which has been taken from the General Catalogue of Variable Stars (1985).

The obtained light and color curves in R and IR are shown in Figure 1, where the light curve is shown by individual observations while the color curve in R-IR by normal points. It is found that the general feature of the light curve is quite consistent with the previous one by Linnell (1982).

Table II shows values of  $\Delta R$ ,  $\Delta IR$  and  $\Delta(R-IR)$  of VW Cep obtained from the present observation. In this table the corresponding values taken from Linnell's (1982) work are also shown in parentheses, as a comparison. Table III shows amplitudes of Max I - Max II, Max I - Min I and Max II - Min II in  $\Delta R$ ,  $\Delta IR$  and  $\Delta(R-IR)$ , respectively. The numbers in parentheses are the ones read from Table 4 of Linnell's (1982) paper.

I would like to express my hearty thanks to JAPOA members who kindly helped during the observation as well as in the subsequent reduction work.

Table 1.  
The times of observed minima of YW Cep

Hel.J.D 2440000+	s.d.	E	filter	O-C
7892.0693	±0.0002	13419	R	-0.0474
7892.0698	±0.0001	13419	IR	-0.0469
7895.9649	±0.0001	13433	R	-0.0482
7895.9641	±0.0002	13433	IR	-0.0490
7896.9416	±0.0002	13436.5	R	-0.0456
7896.9403	±0.0001	13436.5	IR	-0.0469
7899.0270	±0.0001	13444	R	-0.0476
7899.0274	±0.0001	13444	IR	-0.0472
7905.0135	±0.0003	13465.5	R	-0.0449
7905.0121	±0.0001	13465.5	IR	-0.0463
7912.9418	±0.0001	13494	R	-0.0485
7912.9439	±0.0001	13494	IR	-0.0464

Table 2.  
 $\Delta R$ ,  $\Delta IR$  and  $\Delta(R-IR)$  values of YW Cep at maxima and minima.

Phase	$\Delta R$	$\Delta IR$	$\Delta (R-IR)$
Maxima I	-0.633±0.017 (-0.650)	-0.743±0.018 (-0.730)	0.110 (0.133)
minima I	-0.262±0.020 (-0.280)	-0.419±0.010 (-0.393)	0.157 (0.163)
Maxima II	-0.598±0.008 (-0.615)	-0.720±0.022 (-0.703)	0.122 (0.135)
minima II	-0.358±0.004 (-0.348)	-0.499±0.006 (-0.435)	0.141 (0.143)

Table 3.

Three amplitudes of Max I - Max II, Max I - Min I and Max II - Min II in  $\Delta R$ ,  $\Delta IR$  and  $\Delta(R-IR)$ .

Phase	$\Delta R$	$\Delta IR$	$\Delta (R-IR)$
Max I - Max II	-0.035(-0.035)	-0.023(-0.027)	-0.012(-0.002)
Max I - Min I	-0.371(-0.371)	-0.324(-0.337)	-0.047(-0.030)
Max II - Min II	-0.242(-0.267)	-0.221(-0.268)	-0.021(-0.008)

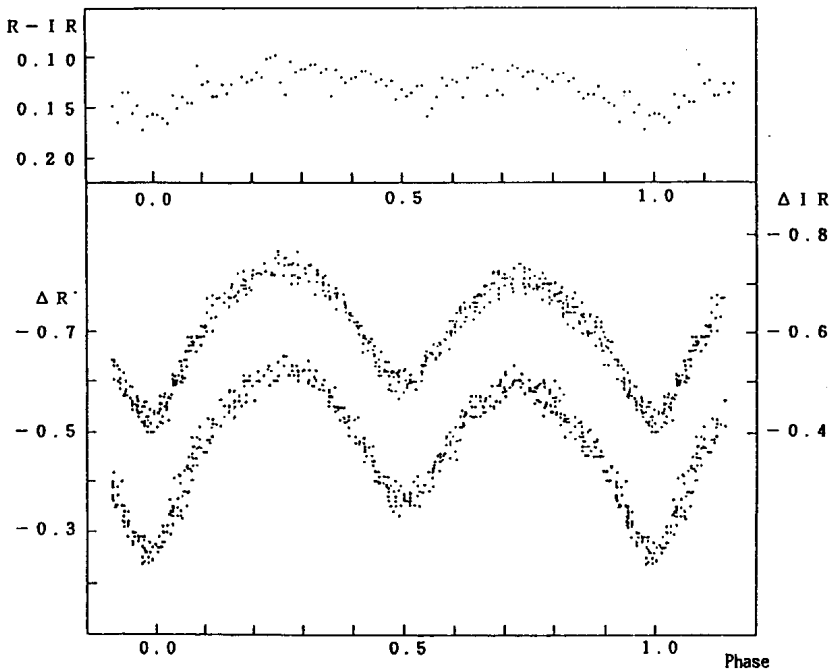


Figure 1.

R and IR Light curves(lower) of VW Cep shown by individual observations and the corresponding color curve(upper) by the mean of several individual ones.

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