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LIGHT ELEMENTS OF V 757 Cen

The variability of V757 Cen=SAO 204919=HD 120734=CoD-36^o8903=CPD-36^o6160 was discovered by Bond (PASP 82,489,1065,1970) on Curtiss-Schmidt objective prism plates. From photoelectric observations in the "y" Strömberg filter Bond, in the same article, derived a period $P=0.3432$, an amplitude $\Delta y=0.4$, the magnitude at maximum $V=8.3$, and confirmed the W UMa type of the star as indicated by the spectra.

This variable was listed by Kukarkin et al. (2nd Suppl.GCVS, 1974) and kept as current program by M. de Groot (IAU, Comm.42, 1973).

In this note we present times of minimum light obtained from about 1000 photoelectric observations in the UBV system made between March and August 1979 at the Bosque Alegre Station of Cordoba Observatory with the 154 cm reflecting telescope, and at El Leoncito Station of Felix Aguilar Observatory (San Juan, Argentine) with the 76 cm Perrine reflecting telescope.

Table I
 Times of minima
 JD hel.2440000+

V	B	U
3940.80745(09)	3940.80938(07)	3940.80774(18)
3970.83333(14)	3970.83340(11)	3970.83536(23)
3973.75011(07)	3973.74914(04)	3973.74863(07)
4024.54094(20)	4024.54095(03)	4024.54101(14)
4025.74068(15)	4025.74100(06)	4025.74043(05)
4027.62836(13)	4027.62837(14)	4027.62845(14)
4031.74757(13)	4031.74580(16)	4031.74574(15)
4033.46211(33)	4033.46325(08)	4033.46127(23)
4033.63356(08)	4033.63336(25)	4033.63310(13)
4069.49467(09)	4069.49513(11)	4069.49396(18)
4069.66343(22)	4069.66170(30)	4069.66108(20)

Individual minima are listed in Table I. The standard errors are given in parenthesis; they were determined from the light curves on each pass-band. A least squares linear ephemeris using the mean values of the minima in the UBV bands, gives

$$\text{Min I} = \text{JD hel.} 2444024^{\text{d}}.53970 + 0^{\text{d}}.3431629 \cdot E \\ \pm .00030 \pm .0000034$$

Table II

Times of maxima
JD hel. 2440000+

V	B	U
3973.83800(28)	3973.83683(41)	3973.83539(08)
4025.65636(15)	4025.65618(11)	4025.65448(15)
4033.54585(31)	4033.54580(13)	4033.54700(13)
4069.57990(21)	4069.57975(17)	4069.57690(16)

Also in Table II are listed four times of maximum light which were handled in a similar way as the minima. The corresponding ephemeris is

$$\text{Min I} = \text{JD hel.} 2444024^{\text{d}}.53893 + 0^{\text{d}}.3431609 \cdot E \\ \pm .00046 \pm .0000051$$

Table III

Mean times of maxima and minima

JD hel. 2440000+	w	cycles	(O-C)
0653.760	1	-4822.50	-0.0008
0654.788	1	-4819.50	.0007
0656.676	1	-4814.00	.0002
3940.80819(60)	1	4756.00	-.0019
3970.83403(67)	1	4843.50	-.0005
3973.74929(43)	1	4852.00	.0012
3973.83674(75)	1	4852.25	-.0004
4024.54097(02)	4	5000.00	-.0014
4025.65567(60)	1	5003.25	-.0008
4025.74070(16)	2	5003.50	-.0001
4027.62839(03)	3	5009.00	-.0003
4031.74637(60)	1	5021.00	-.0003
4033.46221(57)	1	5026.00	-.0003
4033.54622(39)	2	5026.25	.0015
4033.63334(13)	2	5026.50	.0002
4069.49459(34)	1	5131.00	.0001
4069.57885(98)	1	5131.25	.0017
4069.66207(70)	1	5131.50	.0042

Since both solutions are in close agreement within the errors we constructed a new one including the minima and the maxima:

$$\text{Min I} = \text{JD hel. } 2444024^{\text{d}}53953+0^{\text{d}}3431622 \cdot \text{E} \\ \pm 0.00025 \pm 0.0000028$$

Finally, the ephemeris representing these seasonal minima and those of the discovery, derived from the observations supplied by Bond (private communication, 1971) gives the values

$$\text{Min I} = \text{JD hel. } 2442308^{\text{d}}69312+0^{\text{d}}34316929 \cdot \text{E} \\ \pm 0.00106 \pm 0.0000021$$

In Table III are listed the epochs, their standard errors, the assigned weights, the cycles and the residuals (O-C) of the last ephemeris. We see that the secondary minimum is centered at phase 0.5. An inspection of the light curves (not given in the text) indicates that V757 Cen is an A-type W UMa system, exhibiting a flat secondary minimum of about 15 minutes, a primary minimum of amplitude $0^{\text{m}}.47$ in V and the light in the maximum preceding the Min I slightly exceeding the other. Differential colours are almost constant throughout the period.

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