COMMISSION 27 OF THE I. A. U.
INFORMATION BULLETIN ON VARIABLE STARS

Number 2197

Konkoly Observatory
Budapest
1982 September 9

HU ISSN 0374-0676

LIGHT ELEMENTS OF ST INDI

The variability of ST Ind = CoD-48°13615 = S5110 was discovered by Hoffmeister (1949) from photographic plates and visual estimates made in South Africa. He found for this system a W UMa-like light variation with abnormal dispersion (Hoffmeister, 1955a). Further, Hoffmeister (1955b) published the following linear light elements: $P = 0^d.401888$, T_o = JD $2434274^d.407$; also he gave the light curve and 24 times of minimum light. Seven of these minima were determined photographically and the rest visually (Hoffmeister, 1956).

In this note we present six times of minimum light determined from 413 UBV observations made in August 1981 at CTIO*, in Chile, with the 60 cm Lowell telescope.

Individual minima are listed in Table I (the standard errors are given in parenthesis). They were determined from the light curve on each pass-band. The colour average of these minima are listed in Table II (standard deviations in parenthesis) together with the minima given by Hoffmeister.

Table I . Individual times of minima of ST Indi

JDHel 2444000+		
V	B	U
837.68610(13)	837.68667(07)	837.68566(14)
837.88998(37)	837.88917(33)	837.89031(41)
838.49086(12)	838.49074(14)	838.49054(24)
838.69297(29)	838.69267(18)	838.69272(19)
839.69607(32)	839.69588(14)	839.69631(15)
843.51579(43)	843.51519(25)	843.51471(42)

*Cerro Tololo Interamerican Observatory is operated by AURA, Inc., under contract with the NSF (USA).

Table II . Minima of ST Indi

Meth.	JDHel. 2400000+	w	E	(o-c)	(o-c)'	(O-c)"
Pg	34274.417	0.1	-26289.5	0.0057		0.0070
Pg	34302.319	0.1	-26220	-.0231		-.0220
Pg	34478.574	0.1	-25781.5	.0065		.0068
Pg	34488.628	0.1	-25756.5	.0134		.0137
Pg	34490.634	0.1	-25751.5	.0100		.0103
Vis	34505.505	0.1	-25714.5	.0114		.0115
Vis	34507.494	0.1	-25709.5	-.0090		-.0089
Pg	34542.467	0.1	-25622.5	.0002		.0002
Vis	34547.471	0.1	-25610	-.0193		-.0194
Pg	34550.567	0.1	-25602.5	.0626		.0625
Vis	34561.350	0.1	-25575.5	-.0053		-.0054
Vis	34562.363	0.1	-25573	.0030		.0029
Vis	34563.390	0.1	-25570.5	.0253		.0252
Vis	34567.373	0.2	-25560.5	-.0105		-.0106
Vis	34568.392	0.2	-25558	.0038		.0037
Vis	34568.598	0.2	-25557.5	.0089		.0087
Vis	34569.390	0.2	-25555.5	-.0029		-.0030
Vis	34569.594	0.2	-25555	.0002		.0000
Vis	34570.387	0.2	-25553	-.0106		-.0108
Vis	34570.602	0.2	-25552.5	.0034		.0033
Vis	34571.393	0.2	-25550.5	-.0093		-.0095
Vis	34571.598	0.2	-25550	-.0053		-.0054
Vis	34573.400	0.2	-25545.5	-.0117		-.0119
Vis	34573.606	0.2	-25545	-.0067		-.0068
UBV	44837.68622(50)	1.2	-5	-.0011	-.0009	
UBV	44837.88982(59)	0.4	-4.5	.0016	.0018	
UBV	44838.49075(16)	0.8	-3	-.0003	-.0002	
UBV	44838.69279(16)	2.0	-2.5	.0008	.0009	
UBV	44839.69607(22)	2.0	0	-.0006	-.0007	
UBV	44843.51530(54)	0.8	9.5	.0007	.0002	

A least squares linear solution for the 24 photographic and visual minima gives the following light elements:

$$\text{Min I} = \text{HJD } 2434424^{d}.1119 + 0^{d}.401884\ E$$

$$\pm .0050 \quad \pm 000015 \text{ m.e.} \qquad (1)$$

while for the present six photoelectric minima a least squares solution gives the following linear light elements:

$$\text{Min I} = \text{HJD } 2444839^{d}.69675 + 0^{d}.401930\ E$$

$$\pm .00021 \quad \pm .000049 \text{ m.e.} \qquad (2)$$

These results show the period to be constant within the errors. Finally a least squares linear fit was performed with all the minima giving the following light elements (cycles were calculated with the period given in (1)):

$$\text{Min I} = \text{HJD } 2444839^{d}.6967 + 0^{d}.40188233\ E$$

$$\pm.0010 \qquad \pm.00000010 \text{ m.e.}$$

The cycles E and the residuals (O-C) from the latter ephemeris are listed in Table II while the columns labeled (O-C)' and (O-C)" refer to the residuals from (1) and (2), respectively.

Differential V and colour curves are displayed in Figure 1.

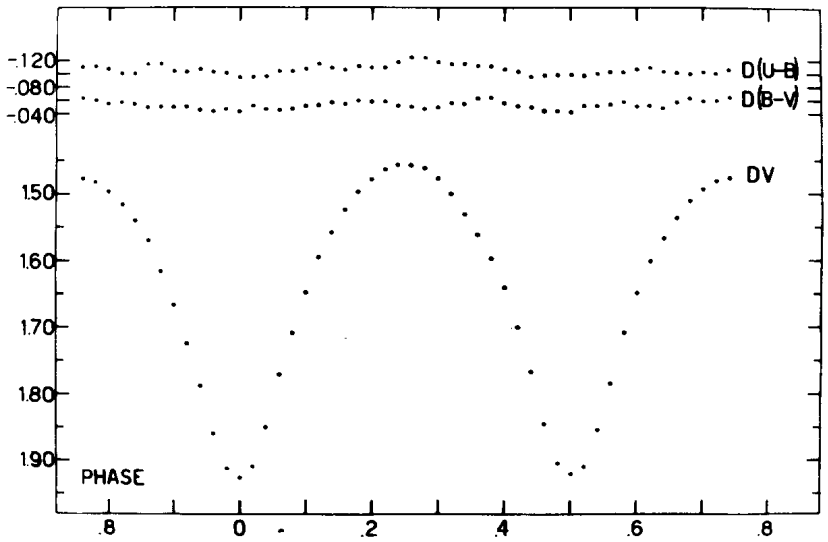

Figure 1

ST Ind is a typical W UMa star as previously classified, eclipses are partial and of equal depths (0.49 mag), thus letting as arbitrary the distinction between primary and secondary minima.

Maxima are highly curved and the light at phase 0.25 exceeds in 0.02 mag the light at phase 0.75. Colours are almost constant throughout the period.

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