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PHOTOELECTRIC LIGHT-CURVES AND MINIMA OF TZ BOOTIS

The eclipsing binary TZ Boo (BD + $40^{\circ}2857$) was observed photoelectrically between March 8 and June 15, 1972 on six nights with the 48 cm Cassegrain telescope of the Ege University Observatory. A total of 132 observations were obtained in yellow and blue light. A RCA 1P21 photomultiplier and B, V filters, which are close to the standard UBV system, were used.

Its variability in brightness was discovered by Guthnick and Prager (1927) and the system was classified as an eclipsing variable. The radial velocity of the star was observed by Chang (1948) and found that has no variability. Chang also explained that only absorption lines of the bright component can be seen in their spectra. Eggen (1967) observed the system spectroscopically and classified it as a G9 type. The photoelectric photometry and the solution of the light curve was made Binnendijk (1969). His light elements are

$$\text{Hel.Min.} = \text{JD } 24\ 39\ 632.8418 + 0^{d}.29716070 \cdot E.$$

According to Binnendijk first and second maxima are not equal; secondary minimum shows a total eclipse, brightness is not constant and rise continuously during the eclipse. All of these are complex problems of this system. Therefore Binnendijk suggested to reobserve the star photoelectrically.

The system was also observed by Carr (1971) photoelectrically. The new light elements, based on all known primary minima, were given as follow:

$$\text{Hel.Min.} = \text{JD } 24\ 40\ 335.7705 + 0^{d}.29716023 \cdot E.$$

But according to these light elements, Binnendijk's and our primary minima become secondary and viceversa. We have also obtained three primary and five secondary minima. The O-C values which were calculated with the elements of Binnendijk appear to be a little large. Therefore, the light elements given by Binnendijk were recorrected using the primary minima of Binnendijk and obtained by us with the method of least squares.

The new elements are:

$$\text{Hel.Min.} = \text{JD } 24\,39\,632.8415 \pm 1 + 0^{d}.29716174 \pm 5 \cdot E.$$

The new minima in the yellow band and O-C values are given in the following Table. C(I), C(II) and C(III) values obtained with the elements of Carr, Binnendijk and the authors, respectively.

Table

JD Hel.	Min	O-C(I)	O-C(II)	O-C(III)
24 41 356.5284	II	+0.0125	+0.0060	+0.0002
392.484	II	.012	.005	- .001
443.4479	I	.0126	.0060	- .0001
450.428	II	.009	.003	- .003
453.397	II	.007	.000	- .006
462.313	II	.008	.001	- .005
465.436	I	.011	.004	- .002
484.4574	I	.0140	.0073	+ .0011

The light and colour curves are shown in the Figure where the individual magnitude differences between the variable and the comparison star BD+40°2859 have been plotted against the phases which were calculated with the new elements.

The new light curves are similar to those of Binnendijk. The complications in the system mentioned above are also seen in the new light curves.

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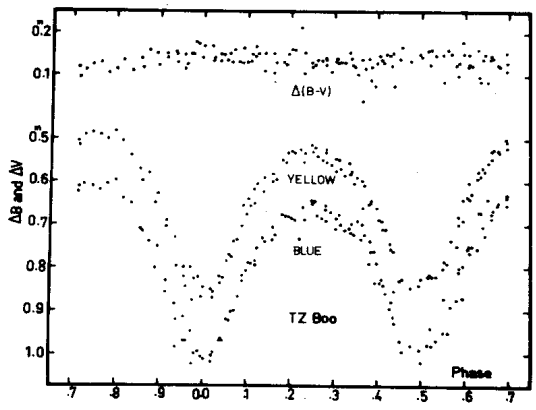

References:

Gutnick, P., Prager, R. 1927, Kl. Veröff. Berlin-Babelsberg No.4,8.

Chang, Y.C. 1948, Ap.J. 107, 101.

Eggen, O.J. 1967, Mem. Roy. Astron.Soc. 70, Pt. 4, 111.

Binnendijk, L. 1969, AJ. 74, 211.

Carr, R.B. 1971, Publ. of the Goodsell Obs. No.16.