

COMMISSIONS 27 AND 42 OF THE IAU
INFORMATION BULLETIN ON VARIABLE STARS
Number 4308

Konkoly Observatory
Budapest
13 March 1996
HU ISSN 0374 - 0676

NEW ELEMENTS FOR THE ECLIPSING BINARY ZZ Cnc

ZZ Cnc = HD 65025 (A0) = BD +11°172 (8.7) = BV 361 was discovered as an Algol-type eclipsing binary by Strohmeier (1961). The GCVS (Kholopov et al., 1985) contains first elements derived by Strohmeier (1962a,b):

$$\begin{aligned} \text{Min} = \text{J.D. } 2426770.350 + 25.5950 \times E \\ (\text{EA } 9.40 - 10.90 \text{ m}_{pg}) \end{aligned} \quad (1)$$

Since the period is rather long, further photometric observations of the star were not numerous. Only one minimum has been published up to now (Isles, 1986).

Brightness of ZZ Cnc was estimated using the photographic plates of the Sonneberg Sky Survey to check the validity of the above elements. These elements were found to be not correct. In the paper of Strohmeier only minima with even numbers of epoch were listed.

The magnitude values determined from 195 plates covering the years 1975-1995, have pointed out to double the value of the period found by Strohmeier. The light curve folded on the new period is shown in Figure 1. Period analysis of that material by means of a method published by Renson (1978) has been done (Figure 2) confirming the above conclusion.

A weighted least squares fit yields the following linear ephemeris:

$$\begin{aligned} \text{Min} = \text{J.D. } 2444635.44 + 51^{\text{d}}1894 \times E \\ \pm 3 \quad \pm 2 \\ (\text{EA } 10.10 - 11.55/10.20(:) \text{ m}_{pg}; D=0.07 \times P) \end{aligned} \quad (2)$$

Table 1. Observed times of minima for ZZ Cnc, epochs and residuals

Minimum JD 2400000+	Epoch	(O-C ₂)	Weight	Observer
26770.35	-349	0.005	1	Strohmeier
27538.33	-334	0.145	1	
27896.334	-327	-0.177	1	
37315.47	-143	0.114	1	
44635.378	0	-0.059	2	Berthold
45403.367	15	0.090	2	
45761.401	22	-0.202	2	
47860.530	63	0.163	2	
48679.389	79	-0.008	2	
48986.507	85	-0.027	2	

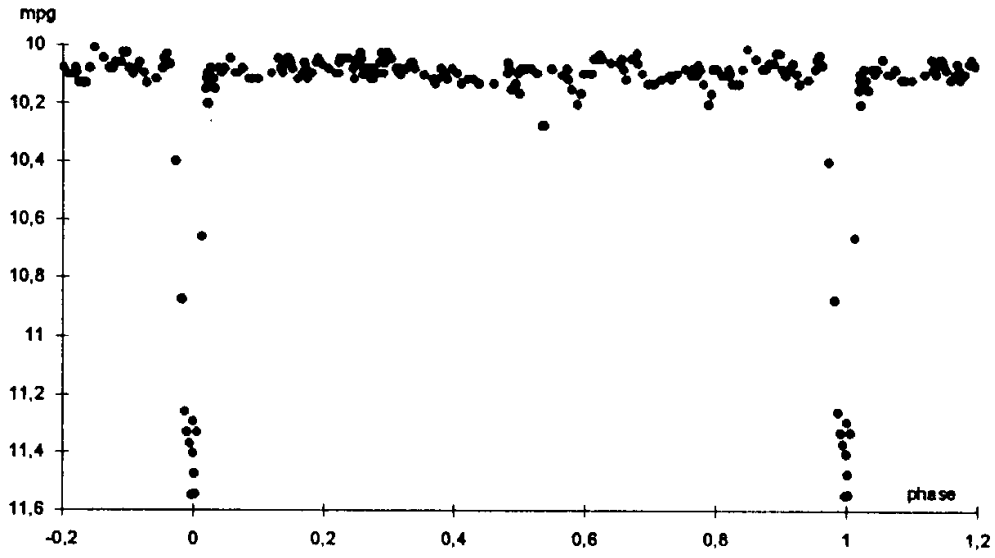


Figure 1. Photographic light curve of ZZ Cnc plotted using the elements (2). Photographic magnitudes were obtained by a photographic photometer and refer to the Harvard-Groningen SA 76.

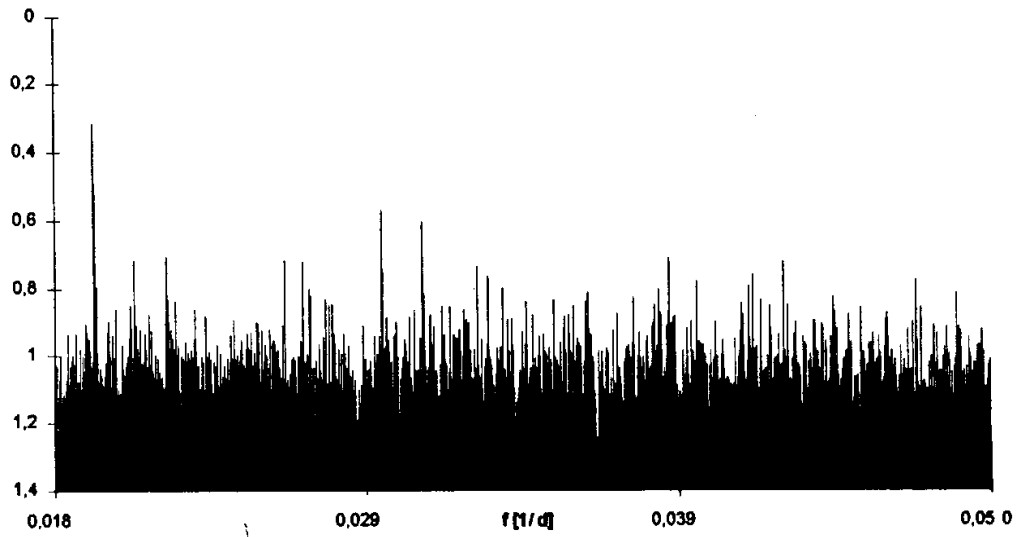


Figure 2. Periodogram (20-55 days) of ZZ Cnc.

The minimum of Isles (derived from 6 visual observations) has not been considered.

This paper could be prepared by courtesy of management and staff of Sonneberg Observatory.

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