

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

Number 2436

Konkoly Observatory  
Budapest  
28 November 1983  
HU ISSN 0374-0676

ON THE PERIOD OF BD Cir

The variability of BD Circini (BV510,  $B_{ph} = 9.8$ ) was discovered by Miss Leavitt (1907) on plates taken of the region centered at  $15^h-60^o$ . She suggested BD Cir to be an Algol type system with an amplitude of 0.8 mag. The first photographic light curve was obtained by Schöffel (1965) who determined a period of  $P = 0.86956^d$ . The photographic light curve showed an amplitude of 0.4 mag which was not in agreement with Miss Leavitt's result.

We have included BD Circini in our UBV photoelectric observing program since 1981. The observations were carried out with the 154 cm reflecting telescope at Bosque Alegre Station of Córdoba Observatory during 32 nights and 5 nights with the 60 cm reflector at Las Campanas Observatory of the University of Toronto. A DC photometer consisting of a RCA 1P21 dry-iced photomultiplier and a set of standard UBV filters were used at Bosque Alegre, while a pulse counting system with an S20 photomultiplier and UBVR filters were used at Las Campanas.

A total of 672 complete UBV differential observations were obtained for BD Cir in relation to the comparison star CPD-55<sup>o</sup>06213. No complete minima were detected in the observations.

Our photoelectric observations were not fitted either by the period given by Schöffel or by their multiples. Therefore, we selected the close pair of minima published by Schöffel and tried several multiples. Then by trial an error we approached a period, giving a reasonable light curve for the UBV observations. This procedure allowed the determination of a preliminary ephemeris from the data obtained in 1981-1982. The resulting period was about  $6.7907^d$  days, i.e. more than twelve times the period suggested by Schöffel. This fact explains why Mallama (1981) had troubles in detecting variability while monitoring BD Circini. Our preliminary ephemeris successfully predicted a minimum which was detected at partial phases in 1983. A light curve was constructed for all photoelectric observations and a time of minimum light was estimated, we found the last value listed in Table I, together with the photographic minima given by Schöffel.

Table I

Minima of BD Cir					
Min	Colour	J.D. Hel.	E	(O-C)	Remarks
I	Pg	2438205.284	-455	0.051	1
I	Pg	2438524.438	-408	0.021	1
I	Pg	2438592.250	-398	-0.079	1
I	Pg	2438877.452	-356	-0.105	1
I	Pg	2438884.457	-355	0.109	1
I	UBV	2444690.786	500	0.003	2

Remarks: 1) Schöffel (1965), 2) Present observations.

Finally, a least squares solution for a linear ephemeris gave:

$$\text{Primary Min} = \text{JD Hel } 2441295.207 + 6.^d79115 \times E, \\ \pm 0.030 \pm 0.00007 \text{ m.e.}$$

The resulting  $\Delta V$  light and  $\Delta(B-V)$  colour curves are shown in Figure 1.

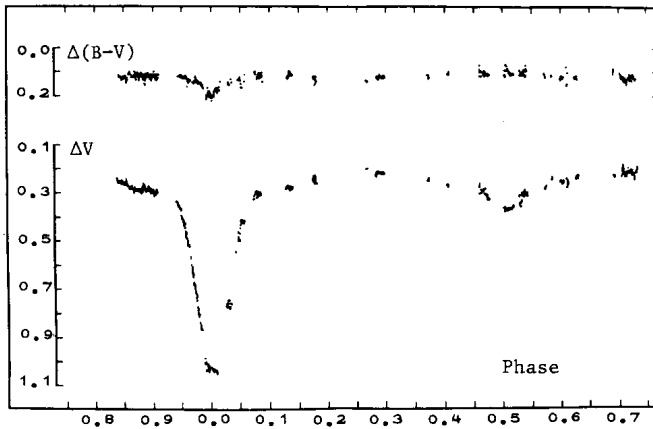


Figure 1

As it can be seen, BD Cir is an Algol type eclipsing binary whose primary minimum is 0.85 mag in depth while the secondary one is 0.2 mag.

SILVANO F. MARTON AND ALBA GRIECO\*

Observatorio Astronómico  
Laprida 854 - 5000 Córdoba  
Argentina

\* Fellow of CONICOR

References:

- Leavitt, H.M., 1907: Harvard Circ. 130  
Mallama, A.D., 1981: Publ.Astr.Soc.Pacific 93, 774  
Schöffel, E., 1965: Inf.Bull.Var.Stars 118