COMMISSION 27 OF THE I. A. U.
INFORMATION BULLETIN ON VARIABLE STARS
Number 1700

Konkoly Observatory
Budapest
1979 November 5

BH CENTAURI

BH Cen is a close (contact) system in the extremely young cluster Córdoba XXVI (NGC 2944). Oosterhoff (BAN, 4, 183, 1928; BAN, 5, 156, 1930) obtained photographic observations and derived from ten light minima a (half) period $P=0^d.3957907$. Previous photoelectric observations (Leung and Schneider, Ap.J.211, 844, 1977) do not cover completely the light curves and indicate that the period is slightly longer than that found by Oosterhoff. Since they covered only one minimum they obtained a period by trial and error based on the consistency of the light curves; they found $P = 0^d.791616$. Eggen (A.J. 83, 288, 1978) noted that the light curve of BH Cen is shifted by $-0^p.13$ when compared with Leung and Schneider's elements. We obtained more than 700 UBV observations at the Bosque Alegre Station of Córdoba Observatory and determined five times of minimum light (Table I).

Table I

Hel.J.D. 2400000+	E	(O-C)	E'	(O-C)'	Remarks
22084.297	-	-	-12209.0	-0.014	1
25025.434	-	-	-8493.5	-0.004	1
25329.408	-	-	-8109.5	+0.002	1
25331.392	-	-	-8107.0	+0.007	1
25351.536*	-	-	-8081.5	-	1
25362.267*	-	-	-8068.0	-	1
25385.228	-	-	-8039.0	+0.016	1
25386.404	-	-	-8037.5	+0.004	1
25404.209	-	-	-8015.5	-0.001	1
25714.497*	-	-	-7623.0	-	1
39621.7975(15)	-	-	+9946.0	-0.035	2,3
43987.8119(08)	-38.5	-0.0006	+15461.5	+0.0038	4,3
43989.7917(05)	-36.0	+0.0002	+15464.0	+0.0046	4,3
43990.5835(04)	-35.0	+0.0004	+15465.0	+0.0048	4,3
44028.5796(04)	+13.0	0.0000	+15513.0	+0.0049	4,3
44095.4693(05)	+97.5	0.0000	+15597.5	+0.0059	4,3

Remarks: 1 - Oosterhoff, 1928, see text; 2 - Leung and Schneider, 1977, see text; 3 - p.e. in parenthesis; 4 - present observations.

A least squares solution for our minima gives the following linear ephemeris:

$$\text{Min.I} = \text{Hel.J.D. } 2444018.28888 \pm .00020 + 0^d.7915942 \pm .0000038 \cdot E, \quad (1)$$

with the cycles E and residuals (O-C) given in Table I. From Oosterhoff's photographic minima, excluding the three values marked with asterisks because their large residuals, we found:

$$\text{Min.I} = \text{Hel.J.D. } 2424260.3709 \pm .0028 + 0^d.7915877 \pm .0000017 \cdot E. \quad (2)$$

The periods found from the two sets of observations are slightly different; the present value is somewhat longer than that for the 1920's, however shorter than that suggested by Leung and Schneider.

An ephemeris including photographic and photoelectric observations gives:

$$\text{Min.I} = \text{Jel.J.D. } 2431748.7478 \pm .0037 + 0^d.79158298 \pm .00000031 \cdot E'. \quad (3)$$

The residuals (O-C)' of these elements are about $+0^d.0005$ for our observations, comparable to the p.e., however systematically shifted; the epoch of minimum light of Leung and Schneider's elements yields a residual twenty times larger than the published p.e..

The former considerations would indicate that the period of BH Cen is changing; if Leung and Schneider's minimum is correct within the quoted error the residuals of formula (3) may be caused by a light-time effect with an orbital period of about 50 years and a projected radius $R \cdot \sin i = 6 \times 10^8$km. However, to decide on this point the system must be observed in the future. The use of ephemeris (1) should be preferred for the prediction of circumstances in the near future.

R. F. SISTERÓ
B.A. CANDELLERO
A. GRIECO
Observatorio Astronómico
Laprida 854, 5000 Córdoba,
Argentina