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ON THE PERIOD CHANGE OF CEPHEID BD +56^o2806

The history of investigation of the star BD +56^o2806 is short. Fernie and Hube (ApJ 168, 437, 1971) discovered that it is located on the H-R diagram in the instability strip or near it. Percy (IBVS No.983, 1975) made 6 BV-observations and ranked BD +56^o2806 in cepheids with period about 3^d. Using 28 BV-observations Szabados (IBVS No. 1107, 1976) confirmed that this star belonged to the cepheids and derived $P = 2.^d80591$.

Our photographic light estimates (a total about 1200) from Dushanbe, Odessa and Moscow plates led to the detection of a large period change (Figure 1). The period variation during 1940-1975 may be represented by instantaneous elements:

JD 2400000 +	Max JD 2400000 +	P	
29160-34300	30615.57	2. ^d 80511	(1)
35310-40885	35749.12	2.80556	(2)
42020-42790	42676.397	2.80618	(3)

or by progressive increase at the mean rate $\left(\frac{\Delta P}{P}\right)_{100} = 0.001$.

E and O-C of the normal moments of light maxima in Table 1 and Figure 1 are calculated from the elements (2).

Let us attract attention to the single point at E=-6922 on the O-C diagram. 13 light estimates in the interval JD 2414663-18235 which form this point do not allow miscalculation of epochs. This conclusion follows from the fact that these estimates are not brought together to a sufficient mean light curve with either $P=2.^d80463$ or $P=2.^d80494$ which should occur in the case of epoch miscalculation either at parabolic or linear O-C variations, respectively. $P=2.^d80556$ gives a sufficient mean light curve.

The form of the light curve (Figure 2) and a large period change characterize BD +56^o2806 as the star W Vir. Then taking their luminosity from Kukarkin-Rastorguev's P-L relation and

using Parelgo's method of the interstellar absorption correction with Sharov's parameters revised we derive the intrinsic colour $(B-V)_{\text{med}}^{\circ} = 0.64$. V_{med} and $(B-V)_{\text{med}}$ were taken from Szabados (1976).

We conclude that BD +56^o2806 is very similar to the W Vir star - AU Peg (Erleksova, in press in Variable Stars) with the following characteristics: P value, smallness of light amplitude, smallness of light curve asymmetry, large $(B-V)_{\text{med}}^{\circ}$, unusual P behaviour. The latter is in the fact that the constancy of P during early epochs is interrupted sudden decrease, then P begins its rapid progressive increase. Both stars are of interest from the point of view of stellar evolution, since both stars are on the red edge of the instability strip and show rapid progressive increase in their periods.

I should like to thank Prof. V.P. Tsessevich and Dr. A.S. Sharov for providing opportunity to use Odessa plates and light estimates from Moscow plates.

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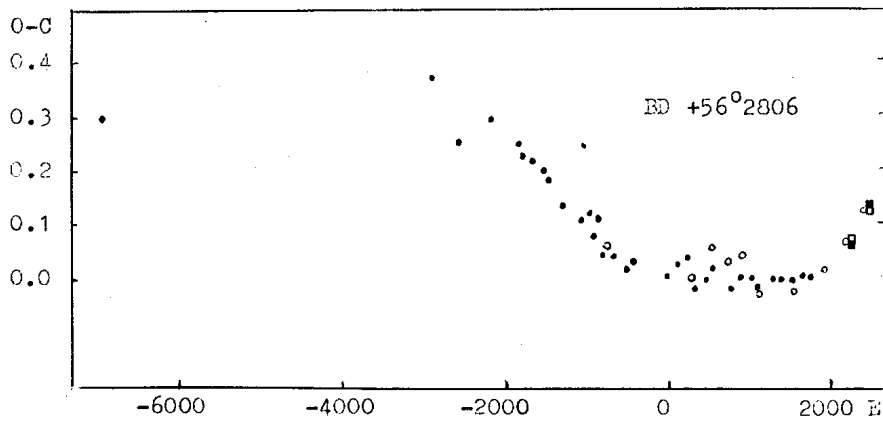


Figure 1

O-C diagram of BD +56°2806. It was constructed from the elements (2). Dots show photographic maxima, open circles - photovisual ones, filled squares - photoelectric B ones, open squares - photoelectric V ones.

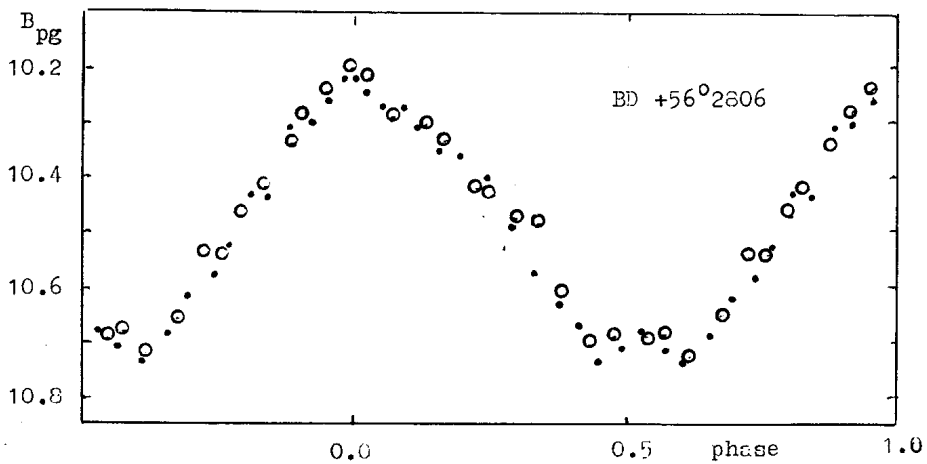


Figure 2

The mean light curve of BD +56°2806. Dots show the normal points derived from 528 observations in JD 2435310-40885 with the elements (2), open circles - ones from 318 observations in JD 2430251-34299 with elements (1).

Table 1
Times of normal light maxima

Max JD		E	O-C (periods)
2400000+			
16 329.86	13pg M	-6922	+0.295
27686.98:	5pg M	-2874	+0.370
28508.67	14pg M	-2581	+0.250
29675.91	18pg M	-2165	+0.295
30615.57	16pg D	-1830	+0.223
30624.06	9pg M	-1827	+0.249
30983.07	28pg D	-1699	+0.213
31302.86	12pg D	-1585	+0.197
31675.95	15pg D	-1452	+0.179
32029.32	2pg D	-1326	+0.133
32789.55	19pg D	-1055	+0.105
33143.09	14pg D(Kodak)	- 929	+0.119
33148.59	20pg D	- 927	+0.080
33378.73	32pg D(Kodak)	- 845	+0.110
33524.44	98pg D	- 793	+0.046
33555.37	27pg D(Isochrom)	- 782	+0.071
33863.90	46pg D	- 672	+0.041
34253.80	18pg D	- 533	+0.015
35749.12	26pg D	0	0.000
36088.68	58pg D,Od	+ 121	+0.031
36461.84	52pg D,Od	+ 254	+0.038
36475.76::	32pv Od	+ 259	0.000
36823.59	37pg D,Od	+ 383	-0.021
37193.96	31pg D,Od	+ 515	-0.005
37208.18::	12pv Od	+ 520	+0.060
37586.80	35pg D,Od	+ 655	+0.014
37901.08::	30pv Od	+ 767	+0.034
37914.93	45pg D,Od	+ 772	-0.029
38277.05::	13pv Od	+ 901	+0.043
38299.36	44pg D,Od	+ 909	-0.005
38664.10	48pg D,Od	+1039	+0.001
38936.15::	25pv Od	+1136	-0.031
38981.07	55pg D,Od	+1152	-0.020
39371.07	14pg D	+1291	-0.010
39721.77	22pg D	+1416	-0.008
40103.33	15pg D	+1552	-0.007
40111.70::	22pv Od	+1555	-0.023
40473.68	23pg D	+1684	-0.001
40824.38	23pg D	+1809	+0.001
41054.48::	36pv Od	+1891	+0.016
41949.60::	39pv Od	+2210	+0.069
42030.95	6 B	+2239	+0.065 Percy (1975)
.98	6 V	"	+0.075 "
42639.93::	18pv Od	+2456	+0.126
42676.397	28 V	+2469	+0.125 Szabados
.425	28 B	"	+0.135 (1976)

Remarks: used plates D - Dushanbe, Od - Odessa,
M - Moscow.