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PERIOD CHANGES IN HD79889

HD79889 was first reported as a variable star by Oja(1987), who estimated a period of 0.0958697^d with a V amplitude of 0.4^m , and regarded it as a member of high amplitude δ Scuti star class.

We carried out observations by 60cm reflector of Xinglong station in Beijing observatory in the V-band of standard Johnson UB system from the year 1988 to 1989, and obtained 13 times of maximum. A light-curve was constructed in Fig. 1 for November 13, 1988. We adopted the same comparison stars used by Oja, C1=HD79763, C2=HD80079 whose spectral types are A0 which is close to the A3 reported in the same catalogue for HD79889 (Rodriguez et al., 1990).

For the purpose to study periodic long-term variations, we collected other materials about HD79889 and had altogether 32 points of times of maximum. Table 1 is the data on it, the figures with asterisk were taken from the references. Columns 2-5 represent heliocentric epoch of maximum, cycle number, residuals with linear equation and parabola respectively. Column 6 is the weight for each data.

Using a linear formula, maximum light occurs at the heliocentric epoch

$$T_{max} = 2446506.00785 + 0.09586943E$$

Fig. 2 shows how the O-Cs vary with cycle number E. A further fitting with the least squares method gives:

$$T_{max} = T_0 + P_0E + 0.5\beta E^2$$

$$T_0 = 2446506.00774 \pm 0.00014$$

$$P_0 = 0.095869547 \pm 5.8 \times 10^{-8}$$

$$\beta = -2.1 \times 10^{-11} \pm 5. \times 10^{-12}$$

Table 1. Times of light maximum on HD79889

No.	T ₀ (I)	E(I)	L(O-C)	Q(O-C)	W
1*	46498.3379	-80.0	-.0004	-.0003	.5
2*	46506.0074	0.0	-.0005	-.0003	1.0
3*	46507.3501	14.0	.0001	.0002	.5
4*	46507.4459	15.0	.0000	.0001	.5
5*	46508.4049	25.0	.0003	.0004	.5
6*	46509.4587	36.0	.0005	-.0003	.5
7*	46510.4175	46.0	-.0003	-.0002	.5
8*	46524.4152	192.0	.0004	.0005	.5
9*	46950.4595	4636.0	.0010	.0008	.5
10*	46951.4174	4646.0	.0002	-.0000	.5
11*	47115.6420	6359.0	.0004	.0002	1.0
12*	47118.6131	6390.0	-.0004	-.0006	1.0
13*	47118.7102	6391.0	.0008	.0006	1.0
14*	47121.6813	6422.0	-.0000	-.0002	1.0
15*	47219.5637	7443.0	-.0003	-.0005	1.0
16	47265.1025	7918.0	.0005	.0003	1.0
17	47486.3692	10226.0	.0006	.0006	1.0
18	47488.2852	10246.0	-.0008	-.0008	1.0
19	47488.3811	10247.0	-.0008	-.0008	.8
20	47489.2450	10256.0	.0003	.0003	.8
21	47489.3412	10257.0	.0006	.0006	1.0
22	47493.1755	10297.0	.0001	.0001	1.0
23	47493.2703	10298.0	-.0009	-.0009	1.0
24	47542.2605	10809.0	-.0000	.0000	1.0
25	47544.2730	10830.0	-.0008	-.0007	.5
26	47544.3695	10831.0	-.0002	-.0001	1.0
27*	47551.4645	10905.0	.0005	.0006	1.0
28*	47551.5599	10906.0	.0000	.0001	1.0
29*	47553.5729	10927.0	-.0002	-.0001	1.0
30*	47553.6692	10928.0	.0002	.0003	1.0
31	47627.0088	11693.0	-.0003	-.0001	.8
32	47634.0080	11766.0	.0004	.0006	.5

Fig. 1 Light curve relative to com. star on Nov. 13 1988

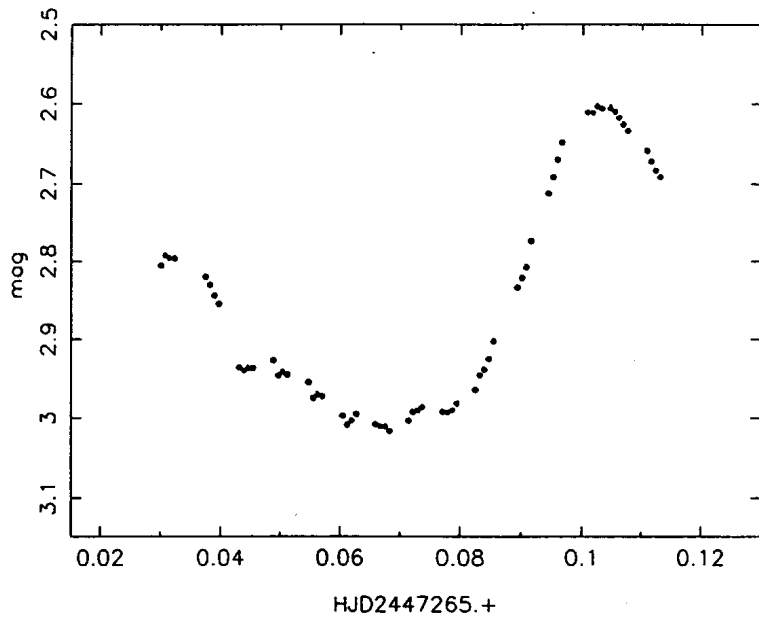
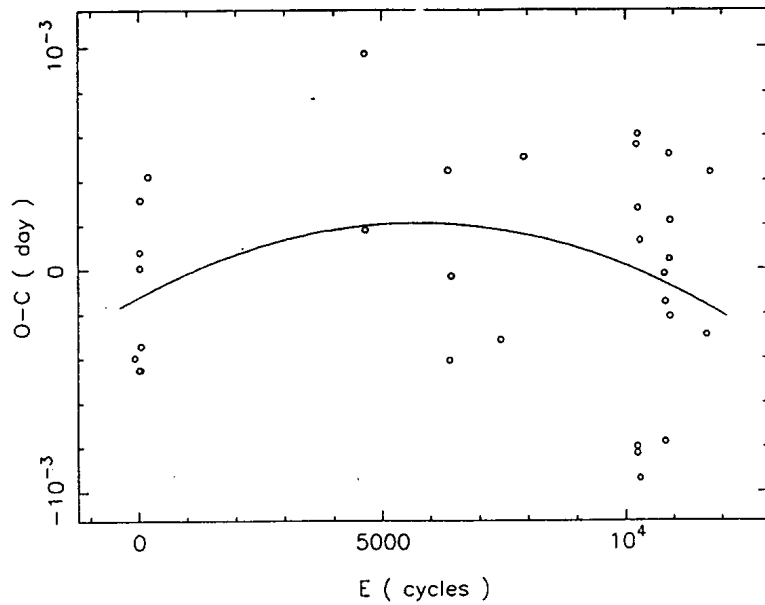


Fig. 2 The O-C Diagram



It indicates that the long period variation accords with the parabola, namely, the rate of period change is negative, and the pulsation period is decreasing.

Considering the short span of time, the fit error is quite big, but the tendency of period change is remarkable. The star deserves further study. Many observations need to be done so that more accurate values will be obtained.

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