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PERIOD CHANGES IN HD79889

HD79889 was first reported as a variable star by Oja (1987), who estimated a period of $0^d0958697$ with a V amplitude of 0^m4 , and regarded it as a member of the high amplitude δ Scuti star class. Rodriguez et al. (1990) carried out observations in Strömngren system and determined the physical parameters of the star. Liu et al. (1991) studied its period variations with observational data for a short span of time, pointed out that many observations need to be done in order to obtain more reliable results about the period changes.

Therefore we carried out further observations by the 60cm reflector at Xinglong station of Beijing Astronomical Observatory in the V-band of standard Johnson UBV system from Mar. 21 to Apr. 2, 1992, and obtained 6 new times of maximum listed in Table 1, where the columns 2-5 represent heliocentric epoch of maximum, cycle number, residuals with linear and parabolic ephemeris respectively, and the column 6 is the weight for each data. Light curves for three nights were constructed in Figure 1. Due to no evidence for variability of the comparison stars used by Oja (1987), C1 = HD79763, C2 = HD80079, we chose only HD80079 as the comparison star, with spectral type of A0, close to the A3 for HD79889 (Rodriguez et al., 1990).

We collected other 32 points of times of maximum about HD79889 (Liu et al., 1991) and altogether obtained 39 times of maximum for a longer span of time to study period variations.

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

$$T_{max} = HJD2446506.0073 + 0^d09586951E.$$

± 1 ± 1

Figure 2 shows how the $(O-C)_L$ varies with cycle number E. After a further fitting with the least squares method we get

$$T_{max} = T_0 + P_0E + 0.5\beta E^2,$$
$$T_0 = HJD2446506.0079 \pm 0.0002,$$
$$P_0 = 0^d09586938 \pm 3 \times 10^{-8},$$
$$\beta = 1.1 \times 10^{-11} \pm 2 \times 10^{-12} (\text{days per cycle}).$$

By fitting the $(O-C)_L$ with the least squares method, the long period variation accords with the parabola as shown in Figure 2. Since the rate of period change, β , is positive, this means that the pulsation period is increasing. This result, obtained by adding new times of maximum for a longer span of time, is inconsistent with that by Liu et al. (1991), one reason of which, may be, they had observational data for only a short span of time.

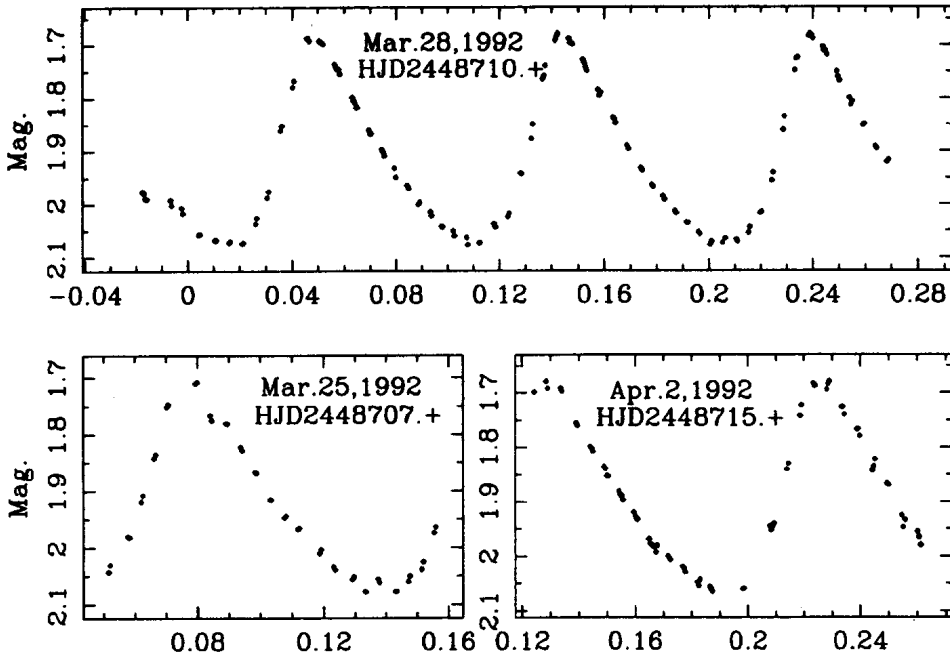


Fig.1 Light curve relative to comparison star

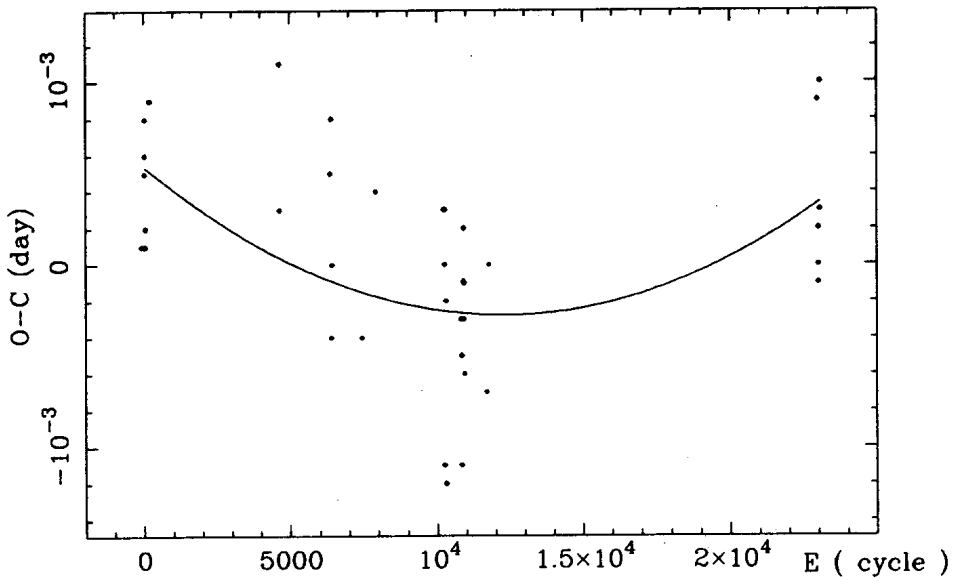


Fig. 2 The O-C diagram

Table 1

New times of maximum and O-C residuals
of HD79889 for linear and quadratic fits

No.	T_{max}	E	(O-C) _L	(O-C) _Q	W
1	48707.0763	22959.0	0.0009	0.0006	0.8
2	48710.0473	22990.0	0.0000	-0.0004	1.0
3	48710.1434	22991.0	0.0002	-0.0001	1.0
4	48710.2390	22992.0	-0.0001	-0.0004	1.0
5	48715.1287	23043.0	0.0003	-0.0001	1.0
6	48715.2253	23044.0	0.0010	0.0007	1.0

Though we have added new times of maximum, which makes the observational data covering a longer time interval, and have obtained the result of increasing pulsation period, the star deserves further study and many observations for a much longer span of time are needed to confirm these results.

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