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A STUDY OF THE PERIOD OF HR 6684

The variability of HR 6684 (=HD 163472,  $\alpha_{1900}=17^h51^m3.8^s$ ,  $\delta_{1900}=+0^{\circ}41'$ ,  $V=5.81$ , B2 IV-V) was discovered by Jerzykiewicz (1972, Publ.Astron.Soc.Pacific 84, 718) whose observations indicated a period of 0.13989 and an amplitude of 0.04 in b. The short period, the small amplitude and the spectral type led Jerzykiewicz to suggest that HR 6684 is a  $\beta$  Cephei (or  $\beta$  Canis Majoris) type variable, although the derived period is quite short for this class of stars. Observations by McNamara and Bills (1973, Publ.Astron.Soc. Pacific 85, 632) seemed to confirm the variation of HR 6684 with Jerzykiewicz's period, but this period did not satisfy their observations of the radial velocity made to test the classification as a  $\beta$  Cephei variable. The earlier radial velocity observations by Feast, Thackeray and Wesselink (1957, Mem.Roy.Astron.Soc. 68,11) and Petrie and Pearce (1961, Publ.Dominion Astrophys.Obs.12,1) also seemed to have the same problem. These facts combined with the rather short period suggest that the period found by Jerzykiewicz might be spurious, a common occurrence with short period variables observed for less than a complete cycle. New photometric and radial velocity observations by Morton and Hansen (1974, Publ.Astron. Soc.Pacific 86, 943), Bolton, Percy, and Shemilt (1975, Publ.Astron. Soc.Pacific 87, 595) and Pike (1974, Publ.Astron.Soc.Pacific 86, 681) seemed to be satisfied by Jerzykiewicz's period but they did not rule out the possibility of an alternative period since in each case less than a full cycle of the variation was covered.

In order to test if the period found by Jerzykiewicz is spurious a new period determination for HR 6684 has been carried out using all available observations, both photometric and of radial velocities. The method of Lafler and Kinman (1964, Astrophys.J. Suppl.9, 216) was used to search each set of observations for possible periods in the range 0.11-0.21 days. It was found that there are two (but only two) periods in this range that satisfy all the

observations:

$$P = 0^d.139889; \quad 1/P = 7.1485 \text{ d}^{-1}$$

$$P = 0^d.162723; \quad 1/P = 6.1454 \text{ d}^{-1}$$

The first period is that previously accepted and the other the period related with this by one in the reciprocal.

The available observational material was insufficient for determining which of the two possibilities is the true period. An attempt to decide the question by comparing the absolute magnitude implied from  $H_\gamma$ ,  $H_\beta$ , and  $H_\alpha$  photometry with the known period-luminosity law for  $\beta$  Cephei stars was also inconclusive but showed that whichever of the two is correct HR 6684 is most likely pulsating in the first vibrational mode.

Further photometric and radial velocity observations of HR 6684 covering at least  $5^h$  are desired to clarify the question of its period.

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#### AMENDMENT

to the paper "Ultra-Violet Blazhko-Effect of X Ari" published in  
IBVS No.1097

I have noticed some errors I made in  $U_{\max}$ -magnitudes of X Ari on the second page of my paper, however, all conclusions remain unchanged. The correct magnitudes should be:

JD 2438017 - 9.45 mag, 2437918 - 9.50, 2437976 - 9.49,

2437916 - 9.50, 2438010 - 9.46, 2437945 - 9.48 (in order of the text).

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