COMMISSION 27 OF THE I. A. U.
INFORMATION BULLETIN ON VARIABLE STARS
Number 1820

Konkoly Observatory
Budapest
1980 July 23

HR 3593, A NEW BRIGHT β CEPHEI STAR

HR 3593 (HD 77320, BD-42.4875) is a 6th magnitude star classified B2Vnn(e) by Houk (1978). The star has been measured more than 400 times in the Geneva photometric system from the Swiss station of La Silla Observatory, Chile, between 1975.9 and 1980.3. The mean apparent magnitudes in the seven filters of the Geneva system, with their standard deviations, are the following:

Filter	U	B1	B	B2	V1	V	G
λ_o[Å]	3456	4024	4245	4480	5405	5500	5805
Mean magnitude	5.321	5.673	4.889	6.486	6.727	6.040	7.257
Standard dev.	0.033	0.028	0.027	0.028	0.026	0.026	0.026

From the values of the standard deviations we see that the star is variable and that the amplitude of variation is almost the same in the whole optical range (a slightly larger amplitude in the U filter can even be noted).

The light variation of HR 3593 has been recorded during several nights. Figures 1 to 3 give three examples of variations in the V magnitude. On the basis of the data obtained during the two consecutive nights (Figures 1 and 2), a period of about 7 h can be derived. However, the light curve shown in Figure 3 is quite different (value of the maximum and shape). Thus, at least two frequencies are necessary to describe the observed light variations.

On the basis of its spectral type and because of the existence of a beat phenomenon in the light curve, we can state that HR 3593 is a new β Cephei star. The amplitude of

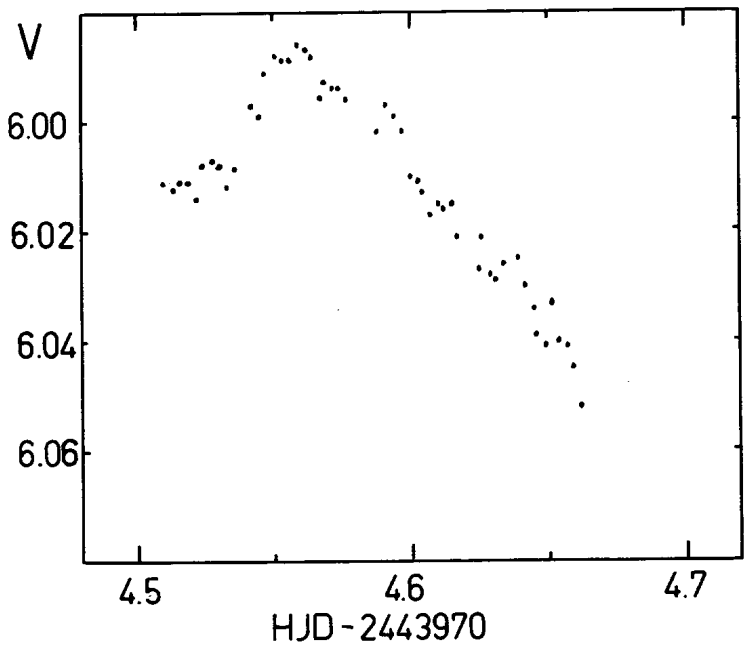
V
6.00
6.02
6.04
6.06
4.5
4.6
4.7
HJD - 2443970

Fig. 1

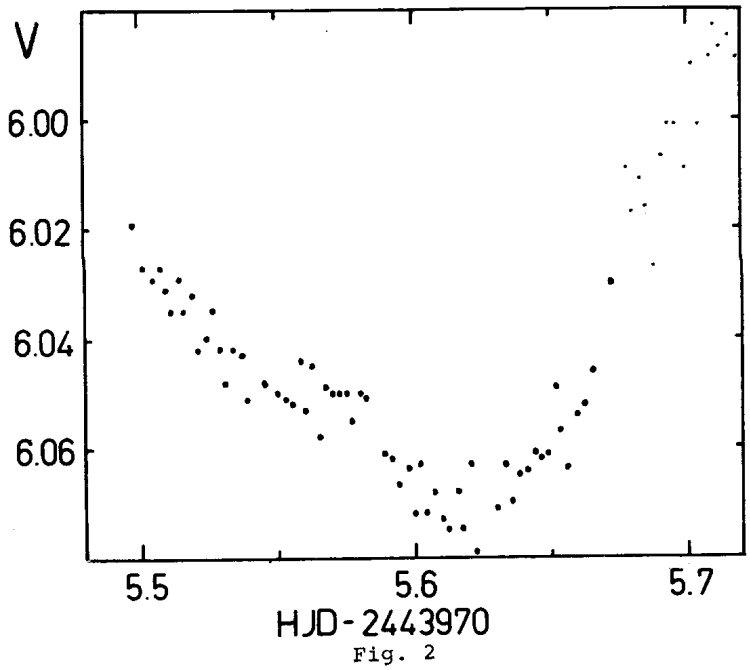
V
6.00
6.02
6.04
6.06
5.5
5.6
5.7
HJD - 2443970

Fig. 2

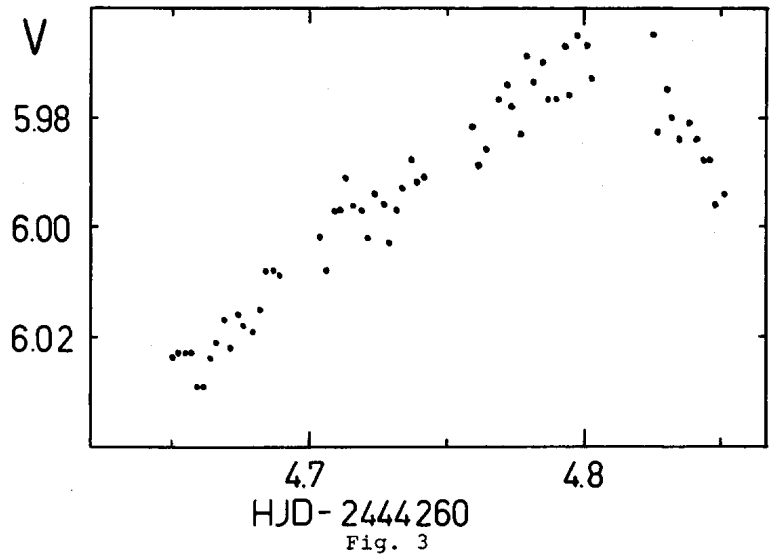

Fig. 3

the light variation ($\Delta V \cong 0^{m}.1$) is among the largest and the period ($P \cong 7$ h) could be the longest presently known for this class of pulsating stars (cf. Lesh and Aizenman, 1978).

In order to determine the various frequencies of the pulsation, it is necessary to follow continuously several successive cycles. Such a program requires cooperation between various observatories in the Southern hemisphere, located on sites sufficiently remote from each other.

G. BURKI, M. BURNET, F. RUFENER
Geneva Observatory
CH-1290 Sauverny/Switzerland

References:

Houk,N.: 1978,Michigan Catalogue, vol. 2, University of Michigan, Ann Arbor

Lesh, J.R., Aizenman, M.,: 1978, Ann.Rev.Astron.Astrophys. 16, 215