COMMISSION 27 OF THE I. A. U.
INFORMATION BULLETIN ON VARIABLE STARS
NUMBER 580

Konkoly Observatory
Budapest
1971 September 15

HDE 302013 - A NEW SHORT-PERIOD VARIABLE STAR

HDE 302013 is at $11^h49^m.8$, $-55°38'$ (1971), about 8' S and 5' E of the open cluster NGC 3960; a finding chart is given in Figure 1. Variability was detected during a programme of photoelectric UBV observations of the cluster. Magnitudes range from $\underline{V}$=10.24, $\underline{B}$-$\underline{V}$=0.20, $\underline{U}$-$\underline{B}$=0.22 at maximum to $\underline{V}$=10.64, $\overline{B}$-$\overline{V}$= 0.34, $\underline{U}$-$\underline{B}$=0.21 at minimum. These colours are compatible with the HDE spectral type of A5, which is confirmed on a spectrogram by M.S. Bessell, the analysis of which will be published elsewhere. It therefore appears very unlikely that the star could be a member of NGC 3960, which has a reddening of $\underline{E}(\underline{B}-\underline{V})\sim$ 0.35 and brightest red giants at $\underline{V}\sim 11.6$.

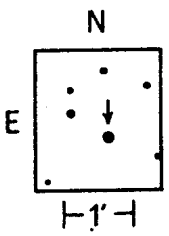

Fig. 1

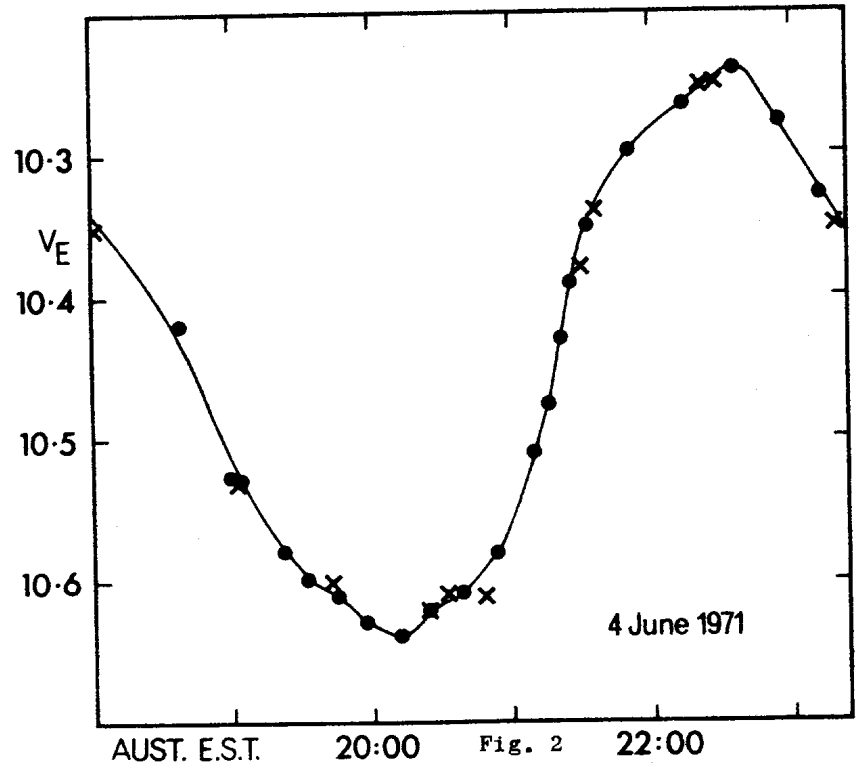

Fig. 2

A light curve is shown in Figure 2, derived only from observations made on one night (filled circles). The star seems to be a short-period cepheid (RRc) of the halo population. The variability is apparently regular; scattered observations made between March and August 1971 can all be fitted to the above light curve with a uniquely determined period of $0^{d}.22135$, the maximum of Figure 2 occurring at HJD = 2441107.028. The isolated observations are shown as crosses in Figure 2.

The nearly sinusoidal shape of the light curve, and the suggestion of a bump shortly before maximum, favour the interpretation that the star is a short-period halo cepheid (RRc) with the very short period of 5.3124 hours. Further observations will be required next season to confirm this.

We are indebted to M.S.Bessell and R.S.Stobie for valuable discussion, and to K.C.Freeman and B.Å.Peterson for some of the observations used to determine the period.

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