

COMMISSIONS 27 AND 42 OF THE IAU  
INFORMATION BULLETIN ON VARIABLE STARS

Number 4919

Konkoly Observatory  
Budapest  
13 July 2000

*HU ISSN 0374 – 0676*

**THE POPULATION II CEPHEID IN THE GALACTIC  
GLOBULAR CLUSTER PALOMAR 3**

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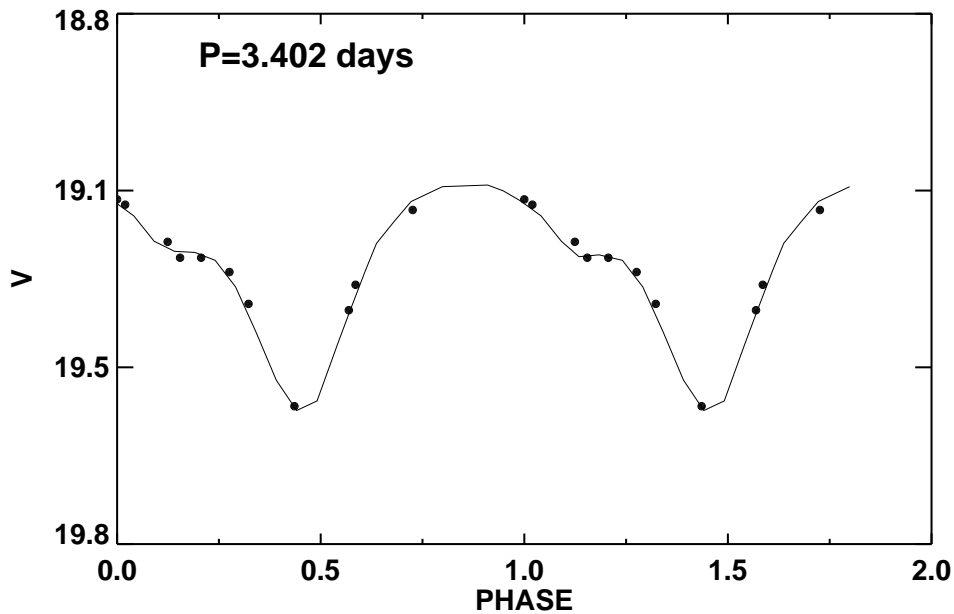
We report a period and the first light curve for a Population II Cepheid in the outer-halo Galactic globular cluster Palomar 3. As well known, Pop. II Cepheids are usually found in clusters with well-developed blue-horizontal branch (HB) tails only (e.g., Wallerstein 1970; Smith & Wehlau 1985). Pal 3 has a completely red HB and is a scarcely populated globular cluster, so that the presence of a Pop. II Cepheid in this cluster would appear extremely unlikely. Yet, the star we studied was suspected to be a variable by Gratton & Ortolani (1984). It is listed in the latest revision of the Catalogue of Variable Stars in Globular Clusters (Clement 1997) as V4. Gratton & Ortolani obtained tentative values for the period  $\approx 3$  days and mean  $V$  magnitude  $\langle V \rangle = 19.32$ . No light curve has ever been published for V4. To the best of our knowledge, no follow-up observations were carried out for V4 since its discovery; in the recent HST study of the cluster by Stetson et al. (1999), V4 lies outside their observed field. Our analysis was based on approx. 20 CCD frames obtained on 6 nights: three in 18-20 January, 1997 at the 1.54-m telescope operated by the Steward Observatory, University of Arizona, one night in February 1997 at the 2-m telescope of NAO “Rozhen”, (Bulgaria), one in April 1999 at the Steward Observatory and one in April, 2000 at NAO “Rozhen”. The photometric reductions were carried out using the DAOPHOT/ALLSTAR package available in IRAF.

The  $V$  light curve is displayed in Fig. 1. In Table 1 are summarized the  $V$  magnitudes for V4. The first four magnitudes in the Table 1 are from Gratton & Ortolani (1984), the five one is from Ortolani & Gratton (1989)

The period we estimate from our new CCD data is slightly longer than the tentative value given in Gratton & Ortolani (1984):  $P = 3^{\text{d}}402$ . The derived mean  $V$  magnitude obtained by directly averaging over the pulsation cycle in intensity is  $\langle V \rangle = 19.28$ . The estimated amplitude in  $V$  is  $0^{\text{m}}43$ . The indication of a bump on the descending branch of the light curve suggests that the star may be a Pop. II Cepheid of the BL Her type (Diethelm 1983). However, a better sampled light curve is necessary to confirm this.

Table 1: Photometry in  $V$  band of V4.

JD 24...	$V$	$\sigma$
45350.76100	19.230	—
45351.82000	19.540	—
45352.80800	19.170	—
45353.80800	19.160	—
46449.71400	19.260	—
50466.96150	19.150	0.022
50467.89980	19.287	0.017
50468.95380	19.311	0.021
50491.47750	19.260	0.015
51288.78170	19.359	0.017
51672.37109	19.347	0.014

Figure 1. Light curve of the Pop. II Cepheid V4 in  $V$  band.

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