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**PHOTOMETRIC OBSERVATIONS OF THE NEW BRIGHT CLASSICAL  
CEPHEID SAO 25009 = HD 32456**

The star SAO 25009 (HD 32456, BD +55°0956, PPM 29610, AGK +55°0438, GSC 3738.0234) of spectral type G5 is one of the variables discovered by the TYCHO Instrument of the ESA Hipparcos Satellite. It was announced to have a magnitude variation range between 7.73 and 8.51 in T magnitudes (TYCHO magnitudes) with a possible 90 day period (Makarov et al., 1994). As a result of an observational program proposed by Bastian (1995), Born (1995) observed visually the star indicating that it should be a new delta Cephei star with a 3.25 day period.

Without previous knowledge of the work by Born we proceeded, from 29 October 1995, to visually monitor SAO 25009. Initial observations indicated that the period of the light variation was much shorter than the announced value of 90 days. For this reason, we decided to continue our monitoring work photometrically. Due to the fact that we had to deal with a rather bright star, and also the need to work with a wide field to include suitable comparison stars in terms of brightness and color index, from 30 December 1995 to 24 February 1996 we undertook the task of observing SAO 25009 in the V band at Piera Observatory (Spain) using a 6-cm finder telescope and a LYNXX-2 CCD camera. We chose SAO 25029 (HD 32606, BD +55°0958, PPM 29633, GSC 3739.0913) as a comparison star.

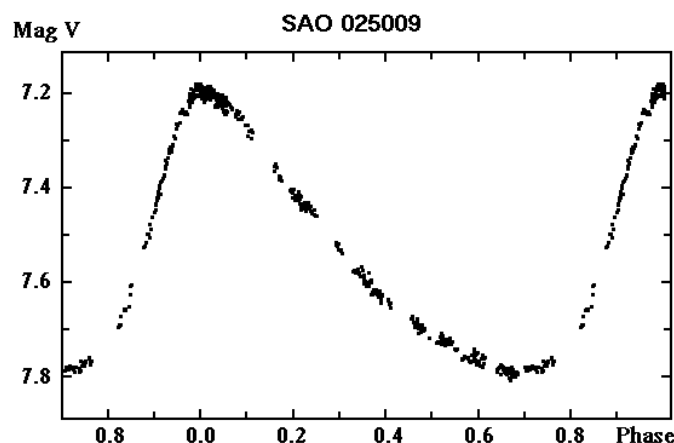


Figure 1

At the same time, we took some brightness measurements using the 0.41-m telescope at Mollet Observatory (Spain) and an Optec SSP-3 photometer. We also determined the V and B magnitudes of the comparison star SAO 25029 using HR 1511, HR 1546, and HR 1561 as reference stars.

Our observations allowed us to conclude that SAO 25009 is a bright cepheid ( $V=7.19 \pm 0.05$  magnitudes at maximum light) with a period close to 3.295 days, and an asymmetry factor  $(M-m)/P=0.30 \pm 0.02$  with a variation range of  $0.60 \pm 0.01$  magnitudes in the V band (Figure 1). According to light curve shape, SAO 25009 can be classified as a classical cepheid. Nevertheless this last statement should be confirmed by other observational means.

We derived the following ephemeris:

$$\begin{aligned} \text{Max.} &= \text{HJD } 2450117.597 + 3^{\text{d}}2951 \times E \\ &\pm 0.004 \pm 0.0008 \end{aligned}$$

Photographic archival plates stored at various observatories should be analysed to refine the above given ephemeris, as well as reconstruct the past years' light curve of this new cepheid.

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Born, E., 1995, *BAV Rundbrief*, **44**, No. 4, 155  
Makarov, V., Bastian U., Hoeg, E., Grossmann, V. and Wicenc, A., 1994, *IBVS*, No. 4118.