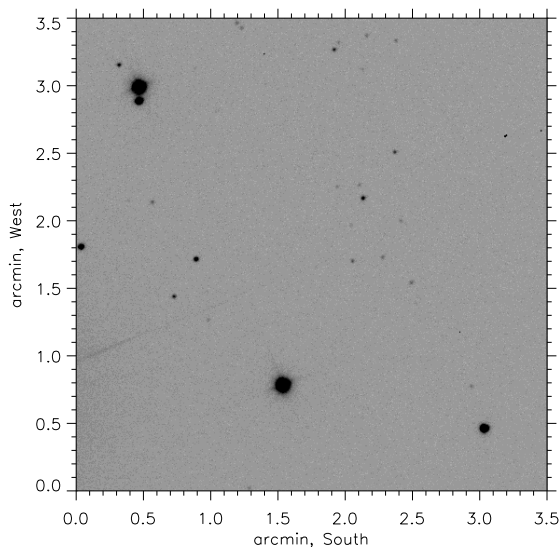


## ABRUPT PERIOD CHANGE IN THE $\delta$ SCUTI STAR V1162 ORIONIS<sup>†</sup>

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The variability of V1162 Ori ( $V = 9.89, B - V = 0.38$ ) as a high-amplitude  $\delta$  Scuti star was discovered by Lampens (1985). Poretti et al. (1990) found the light variations to be monophasic; they determined a period of 0<sup>d</sup>.07868614 and an amplitude of 0<sup>m</sup>.2 in the Johnson  $V$  band. From new observations, Hintz et al. (1998) found that the period had changed to 0<sup>d</sup>.07869165, and that the amplitude of the light variations had dropped to 0<sup>m</sup>.12. In addition, they also saw evidence for the presence of a secondary period.



**Figure 1.** CCD image of the field. The brightest star in the NW corner is V1162 Ori

As a consequence of the findings by Hintz et al. (1998), we started to monitor the star using the Dutch 91 cm telescope at ESO, La Silla, Chile. The detector is a  $512 \times 512$  pixel CCD (ESO CCD #33) with a field of view of  $3'.5 \times 3'.5$  (see Fig. 1). The data were obtained in the Strömrgren  $y$  and  $b$  bands. Data reduction was carried out using the software package MOMF (Kjeldsen & Frandsen 1992) that combines aspects of PSF

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<sup>†</sup>Based on observations obtained at the European Southern Observatory at La Silla, Chile (observing proposal ESO 61-D0128)

and aperture photometry. The resulting differential magnitudes (with respect to the brightest comparison star nearby) are accurate to about 3–4 mmag, the rms scatter of the magnitude difference between the two comparison stars. Our data, typically, cover about one full pulsation cycle per night.

The light curves clearly indicate a significant increase of the amplitude towards the end of the observing season: from January to March 1998 the  $y$ -amplitude was  $0^m11$ – $0^m12$  (comparable to the Hintz et al. 1998 result) and it has increased to  $0^m14$  in April.

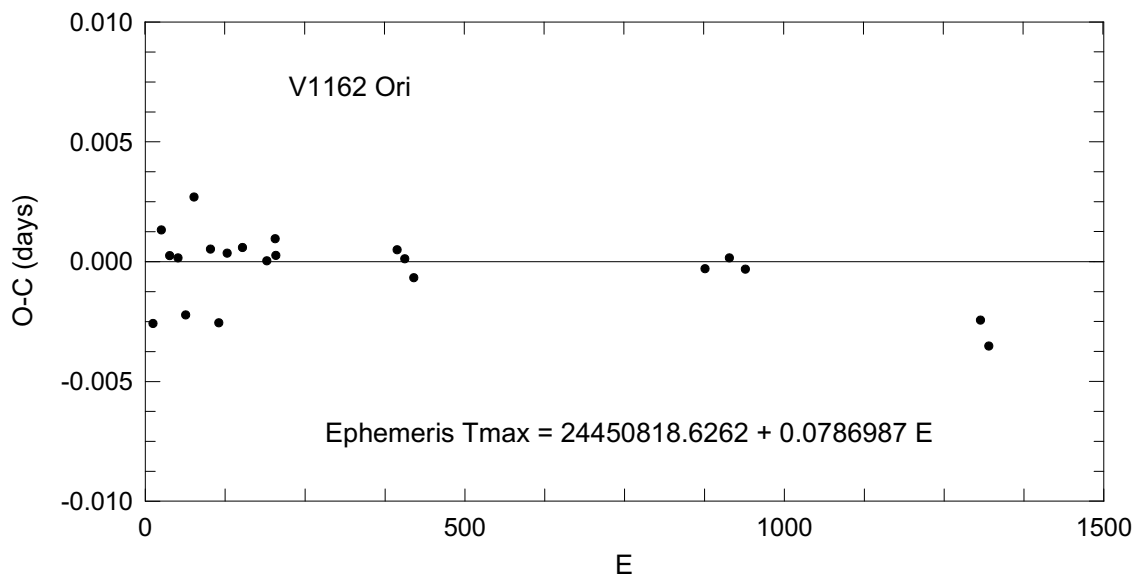
22 times of maximum were derived from our  $y$  data, and a period analysis revealed that a significant change has occurred somewhere in March or April 1998. A linear fit to our January, February and March 1998 times of maximum yields

$$T_{\max} = \text{JD } 2450818.6262 + 0^d.0786987 \times E, \\ \pm 0.0004 \pm 0.0000007$$

where  $E = 0$  corresponds to our first observed time of maximum. The new period is significantly longer than any value reported previously.

Figure 2 shows the resulting  $O - C$  diagram. Our new data show that this star is a most interesting  $\delta$  Scuti star which deserves full attention. We continue monitoring this star and encourage any one to perform multi-colour photometry in order to clarify

- whether the variability of this star is truly monoperoiodic
- what is the real time scale of the period changes
- how the amplitude changes are related to the period changes



**Figure 2.**  $O - C$  diagram for our new V1162Ori times of maximum ( $y$  light)

#### References:

- Hintz E.G, Joner M.D., Kim C., 1998, *PASP* **110**, 689  
 Kjeldsen H., Frandsen S., 1992, *PASP* **104**, 413  
 Lampens P., 1998, *IBVS* No.2794  
 Poretti E., Antonello E., Le Borgne J.F., 1990, *AA* **228**, 350