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

Number 1025

Konkoly Observatory
Budapest
1975 July 31

# ON THE VARIABILITY OF $\theta^1$ Ori A

The announcement of E. Lohse in the Information Bulletin No. 988 of the variability of $\theta^1$ Ori A resulted in a search for observed minima among the material of multiple exposure plates taken of $\theta^1$ Orionis between 1959 and 1965 with the visual refractors of the Dearborn, Lowell and U.S. Naval Observatories. The plates were taken for the purpose of determining the relative positions of the four components of the Trapezium.

Plates taken within 2 days of the minima as determined from the Lohse period of 196.25 $\pm$0.1 days were examined for possible observations of such events. Among these plates 2 Flagstaff plates taken by O. Franz on 21 October 1959 showed the star in question diminished in brightness by 0.7 magnitude at $10^h\ 58^m$ UT. The first plate was taken with an objective grating providing a magnitude difference of two between central image and first order spectra, allowing fairly close estimate of a $\Delta V = 2.2$ between components A and C. The second plate, taken without a grating at $11^h\ 18^m$ UT., shows component A even fainter, making $\Delta V = 2.5$.

The MJD for this observation is $36862^d.470$ while the MJD for Lohse's observation on 11 October 1973 is 41966.229, assuming a UT of $5^h\ 30^m$ for $\Delta V = 2.5$ on his light curve. On the basis of these data, we obtain a period of 196.298$\pm$0.002 days, based upon an estimated uncertainty in the Flagstaff $\Delta V$ value.

A plate taken at the Dearborn Observatory on 2 March 1954 might have covered the secondary minimum based upon the Lohse period. No decrease in magnitude was observed and the revised period makes that event occur 1.8 days earlier.

On the basis of the period derived here the next eclipse minimum will take place on 1975 Dec. 5.484 ($11^h$ $37^m$ UT), beginning approximately 12 hours earlier if the duration of the minimum is 24 hours.

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References:

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