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PHOTOELECTRIC PHOTOMETRY OF  $\theta^1$  ORIONIS A = V1016 Ori

With the Dyer Observatory 24-inch Seyfert reflector in the winter of 1979-80 (between JD 2444191.7 and 2444320.6) we obtained differential magnitudes of the eclipsing binary  $\theta^1$  Ori A with respect to the comparison star  $\theta^2$  Ori B: 21 in V, 15 in B, and 10 in U. These observations have been sent to the I.A.U. Commission 27 archive for unpublished observations of variable stars (Breger 1979), where they are available as file no. 88. Further details are given by Sowell (1981).

The comparison star was the same one used by Hall and Garrison (1969) and Arnold and Hall (1976) in their photometry of BM Ori, the other eclipsing binary in the Trapezium. The diaphragm, 11 arcseconds in diameter, included the light of  $\theta^1$  Ori E, the faint companion star about 4 arcseconds away. The sky offset for the variable was taken always at a point in the Orion Nebula 18 arcseconds due south of the variable.

Only on the first night were observations taken anywhere inside primary eclipse; they covered part of the rising branch around fourth contact. Comparing those observations with the V light curve of primary eclipse shown in figure 3.3/1 of Lohsen (1978), we determined

$$\text{JD}(\text{hel.}) = 2444191.552 \pm 0.005^d$$

for a time of mid primary eclipse.

Our remaining observations plotted with the ephemeris

$$\text{JD}(\text{hel.}) = 2443144.600 + 65.43233^d \text{ E}$$

of Baldwin and Mattei (1977) showed no trace of secondary eclipse. According to the elements  $e = 0.662 \pm 0.041$  and  $\omega = 188.2 \pm 5.6$  given by Lohsen (1978) in his solution of his radial velocity curve, secondary eclipse (conjunction with the primary star behind) should occur at orbital phase  $0.114^p$ ,

surprisingly close to primary eclipse and not at all midway between successive primary eclipses. Unfortunately there was a gap in our observations between  $0^{\text{P}}.05$  and  $0^{\text{P}}.29$ , so we can say nothing about the existence of or depth of any secondary eclipse. It has yet to be detected photometrically but should be looked for in the right place.

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