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THE ECLIPSING BINARY V78 IN OMEGA CENTAURI

According to the proper motion, magnitude, and apparent position (Woolley, 1963) the eclipsing binary in the globular cluster ω Centauri satisfies the membership criteria as to be considered a member of the cluster. Therefore, it turns out to be a very interesting object since it is the brightest known eclipsing binary of extreme population II. Consequently, in collaboration with Fourcade and Laborde, we began observing this star with the 154 cm telescope at Bosque Alegre Observatory. By means of 380 photographic observations published by Martin (1938) plus

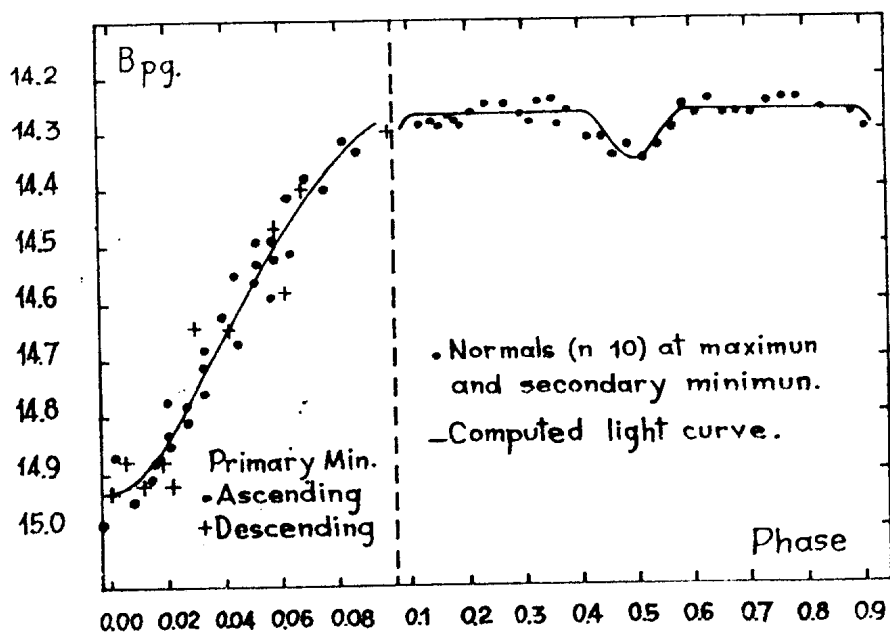


Fig. 1: Light curve of ω Cen. V 78.

80 observations secured at Bosque Alegre and reduced to the same system, the following times of minima were obtained:

	Minima	E	O - C
JD \odot	2426470.3099 ± 0.0067 m.e.	-3079	+0.009
	2427895.4165 ± 0.0036	-1859	-0.001
	2427943.3090 ± 0.0015	-1818	-0.002
	2427970.1714 ± 0.0037	-1795	-0.007
	2440055.6397 ± 0.0032	+8551	+0.001

A least squares solution gives the linear elements:

$$\text{Min} = \text{JD } 2430066.9693 + 1^{\text{d}}.16812879 \cdot E$$

$$\pm 0.0020 \quad \pm 0.00000047 \quad \text{p.e.}$$

The light curve shows a typical EA with a shallow (1/2) secondary minimum (fig.1). A shape-depth relation and a nomographic solution give the following photometric orbital elements for a non-rectified preliminary solution:

$$\begin{aligned} 4\alpha_0^{\text{oc}} &= 0.60 & i &= 72.25^\circ \\ k &= 0.80 & r_s &= 0.2812 \\ L_s &= 0.7675 & r_g &= 0.3515 \\ L_g &= 0.2325 & x &= 0.4 \text{ (assumed)}. \end{aligned}$$

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1968 November 18.

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References

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Woolley, R.V.d.R., 1963, Roy.Obs.Ann., N°2.