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PHOTOELECTRIC OBSERVATIONS OF THE ECLIPSING BINARY IM AURIGAE

The variability of IM Aurigae (BD + 46<sup>o</sup>985 = HD 33853) was discovered by Strohmeier (1959). The variable star, designated BV 267, was recognized photographically as an eclipsing binary with a period of 0.<sup>d</sup>684315 and  $\beta$  Lyrae type light curve (Strohmeier et al. 1963). Spectroscopic and photoelectric observations led to a period of 1.<sup>d</sup>24730 while the light curve appeared to be of Algol type (Margoni et al. 1966). Kondo (1966) confirmed these results independently with his photoelectric observations, and solved the orbital parameters using the method of Russell-Merrill. Mammano et al. (1966) investigated this single line eclipsing binary spectroscopically and calculated the orbital elements. They also deduced the absolute properties of the system by combining their spectroscopic elements with the photometric ones given by Kondo (1966). Dworak (1974) obtained one photoelectric minimum and calculated the light elements as,

$$\text{Min I JD Hel} = 24\ 40\ 515.5465 + 1.<sup>d</sup>247296 \cdot E,$$

collecting the times of minima obtained photoelectrically by Kondo (1966) and Margoni et al. (1966).

The system was observed photoelectrically at the Ege University Observatory on 11 nights from October 1980 to November 1981. The observations were made in yellow and blue colours with the 48 cm Cassegrain telescope equipped with an unrefrigerated EMI 9781 A photomultiplier tube and Johnson's standard B,V filters. A total of 354 and 343 individual points were obtained in B and V colours, respectively. BD + 47<sup>o</sup>1126 was used as

comparison and BD +46<sup>o</sup>0979 as check star. All the differential observations (comparison minus variable) were corrected for the differential extinction. During the observations two primary and three secondary minima were obtained. These are given in Table I.

Table I  
Times of Minima of IM Aur

Hel Min	JD	Min	Filter	O-C
24 44	517.4706	II	B <sub>A</sub> V	-0.0009
	567.3674	II	"	+0.0043
	569.236	I	"	+0.002
	893.5270	I	"	-0.0027
	931.5674	II	"	-0.0046

The new light elements are recalculated collecting all the photoelectric minima published up to date. These elements are as follows:

$$\text{Hel Min JD} = 24\ 38\ 327.7922 + 1.2472906.E.$$

$\pm 11$ 
 $\pm 3$

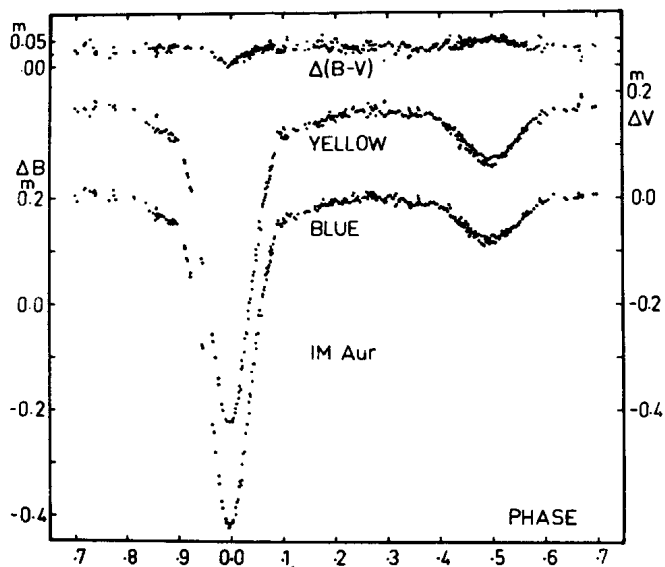


Figure 1

The light and colour curves are presented in Figure 1 where the magnitude differences have been plotted against the phases. The phases in Figure 1 and O-C values in Table I were calculated with the above new light elements. From Figure 1 it can be seen that the system is reddening at the primary minimum and the depth of secondary minimum is changing.

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