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THE PERIOD AND PHOTOELECTRIC LIGHT CURVES OF DM Del

DM Del = BD+13^o 4478 was discovered as an Algol type eclipsing binary by Hoffmeister (1935). Tsesevich (1954) obtained the following light elements from his visual observations:

$$\text{Hel.Min. JD} = 24\ 30\ 663.067 + 0.84456^d \times E \quad .$$

Perova (1952) gave the corrected light elements as follows:

$$\text{Hel.Min. JD} = 24\ 30\ 663.067 + 0.8446725^d \times E \quad .$$

Ishtshenko (1955) confirmed the above Perova's elements and classified the light curve of the system as β Lyrae. Schneller (1960) observed DM Del photoelectrically in one colour and analyzed his light curve. Diethelm (1976) gave the period of 0.333042 from the visual observations. But several observers showed that this period was not correct. Berthold (1978) observed the system visually and photographically and gave the following light elements:

$$\text{Hel.Min. JD} = 24\ 42\ 685.302 + 0.8446733^d \times E \quad .$$

According to his photographic light curve, the depths of the minima are approximately equal.

In order to check the period of DM Del, we observed it photoelectrically during the observational seasons of 1982 and 1983 in 12 different nights. The observations were made with the 48 cm Cassegrain reflector equipped with an unrefrigerated EMI 9781A photomultiplier tube and with B,V filters very close to Johnson's system. BD+14^o 4379 was used as comparison star. Three primary and four secondary times of minima were obtained. These minima are given in Table I where $O-C_1$ residuals are computed with the elements in GCVS (1969). It is seen that all $O-C_1$ values are large and positive. Therefore, using these photoelectric minima given in Table I and the photoelectric minimum time of Schneller, the new light elements were calculated by the method of weighted least squares as follows:

$$\text{Hel.Min. JD} = 24\ 45\ 523.4368 + 0.8446747^d \times E \quad .$$

± 9 ± 3

Table I. The times of minima of DM Del

Hel.Min. JD	Min.	Filter	O-C ₁	O-C ₂
24 45 194.4394	II	B,V	0.0491	0.0034
200.345	II	B,V	0.042	-0.004
219.3558	I	B,V	0.0476	0.0019
523.4355	I	B,V	0.0452	-0.0013
605.3694	I	B,V	0.0459	-0.0008
613.396	II	B,V	0.048	0.001
619.3059	II	B,V	0.0453	-0.0014

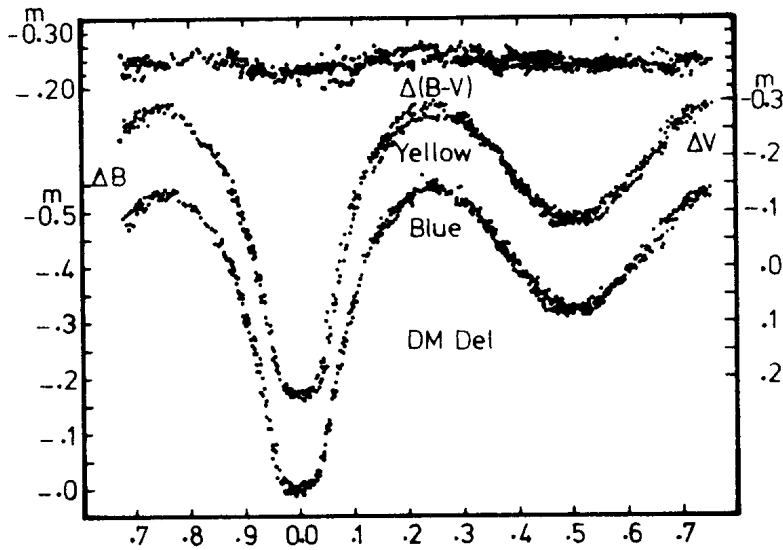


Figure 1. Light and colour curves of DM Del

The light and colour curves are presented in Figure 1 where the individual magnitude differences (variable minus comparison) have been plotted against the phases. The phases in the figure and O-C₂ values in Table I were calculated with the new light elements. The light curves show that DM Del is a typical β Lyrae type eclipsing binary. The system varies about 0.^m540 and 0.^m510 at the primary, 0.^m220 and 0.^m200 at the secondary minimum in blue and yellow light, respectively. The colour curve shows that there is a noticeable colour variation at the primary minimum.

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