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COMPLETE B, V, R, I LIGHT CURVES OF CE LEONIS

The compact, nondegenerate field binary, CE Leonis (S 7763) was discovered by Hoffmeister (1963). CE Leo has a high Northern galactic latitude of 74° . Light curves were published in 1987 which covered the secondary eclipse (Samec and Bookmyer 1987). These preliminary observations verified Meinunger and Wenzel's (1968) classification of the light curves as W UMa-type.

The present observations were made on 31 May - 7 June, 1989 at Kitt Peak National Observatory in Tucson, Arizona using the 0.9m #2 reflector with a photometer which housed a dry-ice-cooled RCA 31034a Ga-As photometer tube. Complete Johnson-Cousins' B,V,R_c,I_c light curves were obtained with more than 700 observations taken at each effective wavelength.

Three epochs of minimum light were determined from observations made during one primary and two secondary eclipses. The first two epochs of minimum light were determined by an iterative technique based on the Hertzsprung method (1928), while the last was determined with the bisection-of-chords method. These epochs are given in Table I along with the others determined from photoelectric observations by Hoffman (1983) and Samec & Bookmyer (1987). The probable errors of our time determinations are indicated in the accompanying parentheses. Here, we have corrected the time of minimum light given in the report of Samec and Bookmyer (1987). The value was in error by one JD.

TABLE I

JD HEL. 2440000	Cycles	(O-C) ₁	(O-C) ₂	Source
5044.5495	- 8684.5	- 0.0002	0.0002	Hoffman
5047.4325	- 8575.0	0.0002	0.0006	Hoffman
6829.0089	- 2803.5	0.0000	- 0.0006	Samec & Bookmyer
7679.6687(1)	0.0	- 0.0002	- 0.0004	Present Observations
7680.7320(3)	3.5	0.0011	0.0009	Present Observations
7683.7642(6)	13.5	- 0.0009	- 0.0011	Present Observations

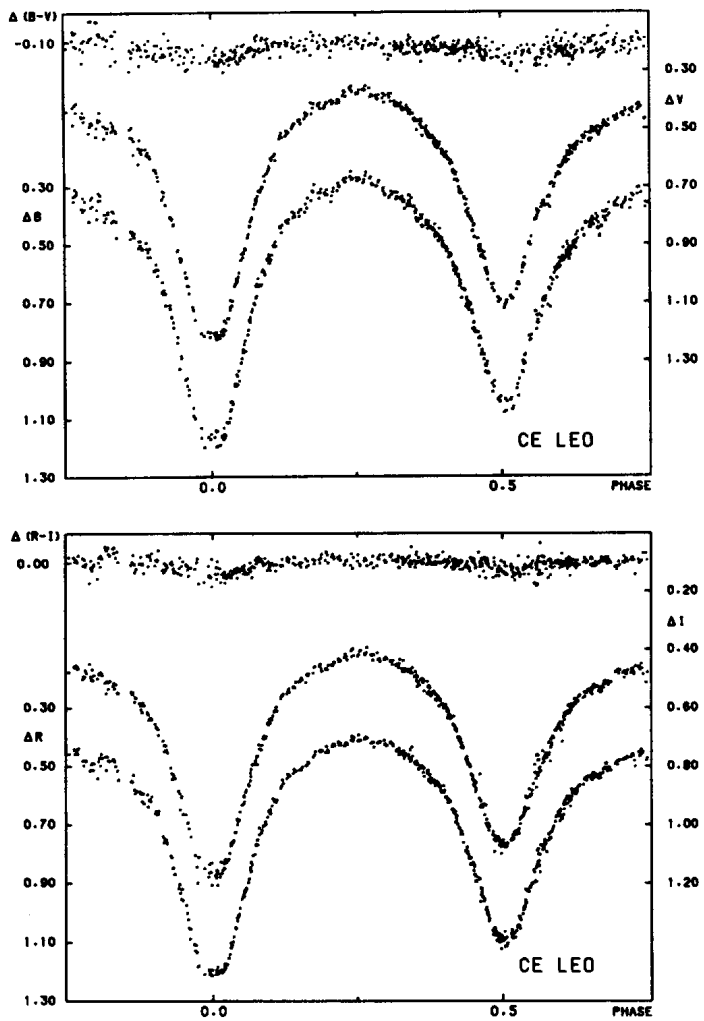


Fig. 1 - Light curves of CE Leo as defined by the individual observations.

These times of minimum light along with a starting ephemeris consisting of our primary epoch and the period of Meinunger and Wenzel (1968) were introduced into a least squares solution to obtain the following improved linear ephemeris:

$$\text{JD Hel Min. I} = 2447679.6689 + 0.30342785d \cdot E .$$

$$\pm \quad \quad 3 \quad \quad 5$$

We also determined a quadratic ephemeris based on all available timings of minimum light:

$$\text{JD Hel Min. I} = 2447679.6690 + 0.30342755 \cdot E - 8 \times 10^{-11}d \cdot E^2$$

$$\pm \quad \quad 8 \quad \quad 20 \quad \quad 1$$

The linear ephemeris was used to calculate the (O-C)₁ residuals in Table I and the phases of the present observations. The quadratic ephemeris was used to calculate the (O-C)₂ residuals.

The complete light curves of CE Leo defined by the individual observations are shown in Figure 1 as Δm versus phase. The analysis of the observations is underway.

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