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A PERIOD DETERMINATION FOR THE ECLIPSING BINARY NSV 03005

In March 1988, NSV 03005 (BD +17° 1281, HD 258878, SAO 095781), +8.2 V, F2II, was discovered to be a probable long-period eclipsing binary with an amplitude of 1^m8 and eclipse duration of 12-14 days (Kaiser et al. 1988). I have now searched the Harvard Photographic Plate Collection for addition minima. The variable was estimated on 577 plates of the AC series, 1898-1952, and 177 plates of the Damon series, 1967-1988, using the B magnitudes of comparison stars previously reported (Table I, Kaiser et al. 1988). NSV 03005 appeared at maximum, +9.0 m_b, on almost all plates. Six plates showed the variable considerably fainter:

TABLE I.

JD 2400000+	m _b	E	Phase
15777.703	+10.3	0	-0.0013
18295.829	10.9	2	-0.0005
20815.817	10.0	4	+0.0017
22072.548	10.8	5	+0.0003
27106.639	10.5	9	+0.0002
27107.647	10.6	9	+0.0010

A period of 1258^d56 fits these observations and the minimum observed by Kaiser et al. (1988), JD 2447243.4. Times of primary

minima are represented by the elements:

$$JD_{\min} = 2415779.4 + 1258^{\text{d}}.56 E$$

Epoch numbers and phases calculated from this ephemeris are noted in the Table. The next primary mid-eclipse is predicted for 2 September 1991.

One of the Damon plates was exposed just five days prior to the observed mid-eclipse date of 23 March 1988. No dimming of the variable was detected on this plate by visual inspection. The observations in the Table show that the variable is $>1^{\text{m}}0$ fainter than maximum within two days of minimum. I concluded that plates within three days of mid-eclipse would clearly reveal minima. Within this $\pm 3^{\text{d}}$ range, plates showing the variable at maximum were found to eliminate all the sub-multiples of the derived period from 1/2 to 1/20 P.

The good agreement of faint observations with a constant period and the fact that the star is faint on less than 1% of the plates strongly support the classification of NSV 03005 as an eclipsing binary.

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