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PHOTOELECTRIC LIGHT CURVES OF VZ PISCIUM

The very short period eclipsing binary system VZ Psc was confirmed, photoelectrically, as a W Ursae Majoris-type system by Moorehead (Wolff et al. 1965). Subsequent photoelectric observations, made by Eggen (1967), Poretti (1984, 1985), Davidge and Milone (1984) and Fry and Milone (1985), have resulted in three published photoelectric minima and an initial period determination of 0.261 days. Bradstreet (1985) has obtained two well covered one-color photoelectric light curves. However, these have high probable errors of a single observation of $\pm 0^{m}.018$ and $\pm 0^{m}.022$. He applied the Wilson-Devinney code to his most recent light curve but no unique solution was determined. Hrivnak and Milone (1985) have conducted a recent spectroscopic study and stated that VZ Psc has a mass ratio near unity. The shallow depths of minima (about $0^{m}.3$) and the apparent variability of the amplitude and shape of the light curve have hampered work on the system.

The present observations were made on October 10 and 11, 1986. The 24 inch F/13.5 reflector at Lowell Observatory was used with standard Johnson B, V filters and a thermoelectrically cooled EMI 6256 photomultiplier tube. The comparison star was BD +04°5010. The check star is the $11^{m}.5$ star eastward and adjacent to the comparison star shown on the chart by Giclas et al. (1959). Approximately 320 were obtained at each effective wavelength.

Four epochs of minimum light were determined from observations made during two primary and two secondary eclipses. The bisection of chords technique was used. These are given in Table I.

JD Hel 2446700+	Minimum	Cycles	(O-C)
9.6894	II	-4.5	-0.0008
9.8228	I	-4.0	0.0018
10.7344	II	-0.5	-0.0009
10.8658	I	0.0	-0.0001

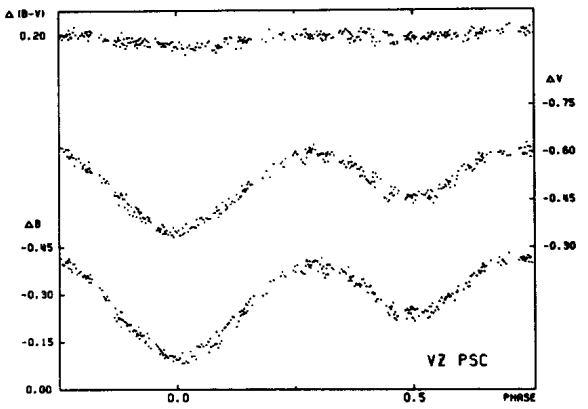

Fig. 1 - Light curve of VZ Psc defined by the individual observations.

These four minima along with thirteen other photoelectric minima by Eggen (1967), Bradstreet (1985), and Poretti (1984, 1985) were introduced with equal weights into a least squares solution to obtain the following improved ephemeris:

$$\text{JD Hel Min. I} = 2446710.8659 + 0^{d}.26125897$$
$$\pm \qquad 4 \pm \qquad 4 \text{ (p.e.)}$$

This ephemeris was used in calculating the O-C's in Table I and the phases of the present observations.

The B and V light curves of VZ Psc 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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