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PERIOD AND LIGHT-CURVE OF THE CLOSE ECLIPSING BINARY FZ ORIONIS

FZ Orionis ($\alpha_{1950} = 5^h 38^m 45^s$, $\delta_{1950} = 2^{\circ} 35.0'$) was discovered by Hoffmeister (1934). The General Catalogue of Variable Stars (Kukarkin et al., 1969) gives the following information: type EW?, photographic magnitude range 10.0 to 11.0, period 1.597 day (?), spectral type G0. The W Uma-type light-curve was suspected by Soloviev (1945). The period of 1.597 day is given by Kippenhahn (1953) (type β Lyrae).

Analysing 1229 visual estimates of FZ Ori made by GEOS, Figer (1983) has shown that it is a W Uma-type eclipsing binary (EW) with a period about 0.4 day. Figer's work leads to the ephemeris:

$$\text{Min I} = \text{Hel. J.D. } 2444024.4583 + 0.3999866 E$$

$\quad\quad\quad +28 \qquad\qquad\quad +18$

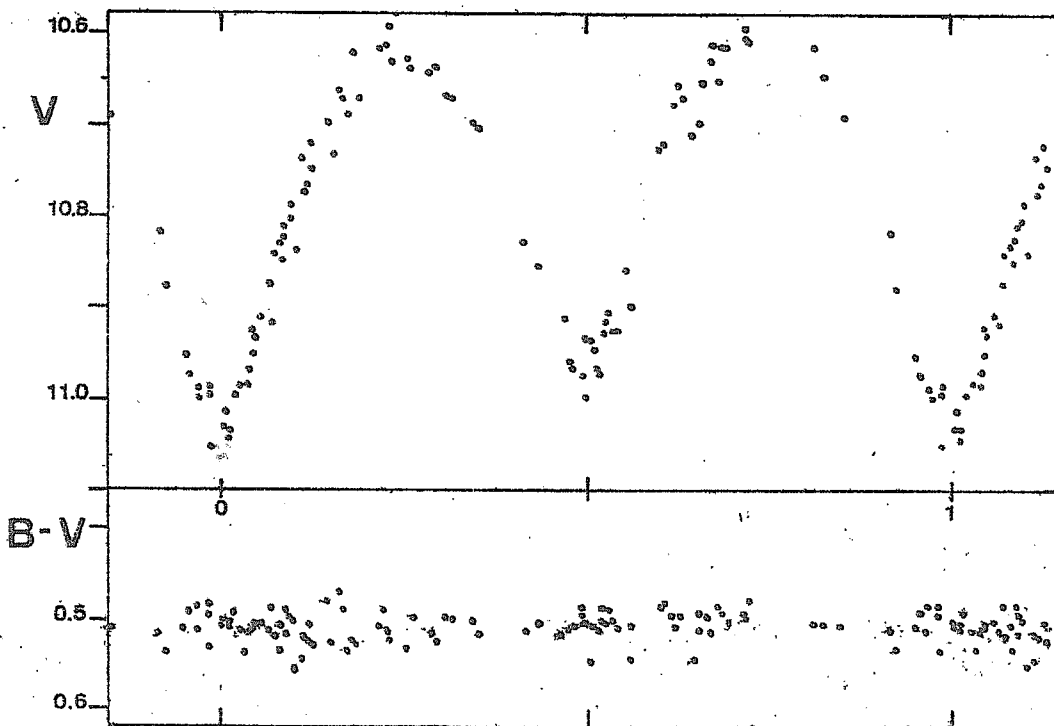


Figure 1

V and B-V light-curve of FZ Ori

In order to check this result and to obtain BV light curves (Johnson and Morgan system), FZ Ori was measured with a photoelectric photometer attached to the 1m telescope at Pic du Midi Observatory (France). FZ Ori was observed during 4 nights from 1983 December 4 to 7. These measurements alone confirm the period given by Figer (1983) and the EW nature of FZ Ori (typical V light curve and constant B-V: Figure 1). The photoelectric measurements also confirm the discrimination between primary minimum and secondary minimum as made by Figer (1983). Table I gives dates and O-C's for the 3 individual photoelectric minima obtained from 1983 December 4 to 7. The O-C values are referred to Figer's ephemeris.

Table I.

	UT	HJD	O-C	type of minimum
1983 Dec 5	2 ^h 14	2445673.598	-0.005 d	I
1983 Dec 6	2 ^h 14	674.598	-0.005 d	II
1983 Dec 7	21 ^h 25	676.398	-0.005 d	I

Since the star was observed during 4 successive nights only, no precise ephemeris can be computed from the photoelectric measurements alone. Lumping the 44 GEOS' visual minima (weight 1) and the 3 photoelectric minima (weight 3), one obtains the following ephemeris (95% level of confidence for the error bands):

$$\text{Min I} = \text{Hel. J.D. } 2444024.4580 + 0.3999860 E$$

$\quad\quad\quad +25$ $\quad\quad\quad +12$

Figure 1 shows the V and B-V light curve of FZ Ori using the latter ephemeris. V magnitudes range from 10.61 to 11.02 (Min. I) and 10.95 (Min II). The mean B-V is equal to 0.51. These values are consistent with an EW type. Although no correction for interstellar extinction was made, this B-V value is in good agreement with Eggen's period-colour relation for contact binaries (1961, 1967).

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