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PHOTOELECTRIC LIGHT CURVES OF BX PEGASI

The very short period eclipsing binary system BX Peg was discovered by Hughes (Shapley and Hughes, 1934). Photoelectric light curves have been published by Zhai and Zhang (1979) and Hoffman (1982). Three photoelectric times of minimum light have been recently published by BAV (1984). Leung, Zhai, and Zhang (1985) used the Wilson-Devinney code to determine a solution from Zhai's and Zhang's data which were obtained with an uncooled photomultiplier. Another solution using light curve synthesis techniques was determined by Kaluzny (1984) who used Hoffman's incomplete light curve. Both sets of data indicate that BX Peg undergoes total eclipse during primary minimum, but the depth of this minimum is somewhat different in the two curves. It is interesting to note that Chou's (1966) light elements give a primary minimum which now appears as a secondary minimum when compared to Zhai's and Hoffman's primary epochs.

The present observations of BX Peg were made on the nights of September 27-30, inclusive. The 24 inch F/13.5 reflector at Lowell Observatory was used with standard V, I filters in the Kron-Cousins-Bessell system (Bessell, 1976) with a dry-ice-cooled RCA 31034B photomultiplier tube. The comparison and check stars were BD +25°4584 and BD +25°4582, respectively. Observations were halted during the last night due to instrument failure, so the light curve is incomplete. Approximately 200 observations were obtained at each effective wavelength.

Four epochs of minimum light were determined from observations made during two primary and two secondary eclipses. All minima were determined by the Hertsprung technique (1928) except for the earliest

minimum which was found by the bisection-of-chords method. These are the last four epochs given in Table I.

Table I

JD Hel. 2440000+	Minimum	Cycles	(O-C)	Source
44195.3771	I	-5192.0	-0.0002	Hoffman, 1982
44195.2373	II	-5192.5	0.0002	Hoffman, 1982
45640.2445	II	-39.5	-0.0006	BAV #38, 1984
45646.2746	I	-18.0	0.0005	BAV #38, 1984
45651.3219	I	0.0	0.0002	BAV #38, 1984
46701.7787	I	3746.0	0.0010	Present Observations
46703.7409	I	3753.0	0.0002	Present Observations
46703.8797	II	3753.5	-0.0011	Present Observations
46704.7227	II	3756.5	0.0006	Present Observations

The times of minimum light shown in Table I were introduced with variable weights into a least squares solution to obtain the following improved ephemeris:

$$\text{JD Hel Min.} = 2445651.3217 + 0^d.28042071 E$$

$\pm$      $2 \pm$      $4$  (p.e.)

and this was used in calculating the O-C's in Table I and in determining the phases of the observations. The period is significantly different than that given by Chou (1966).

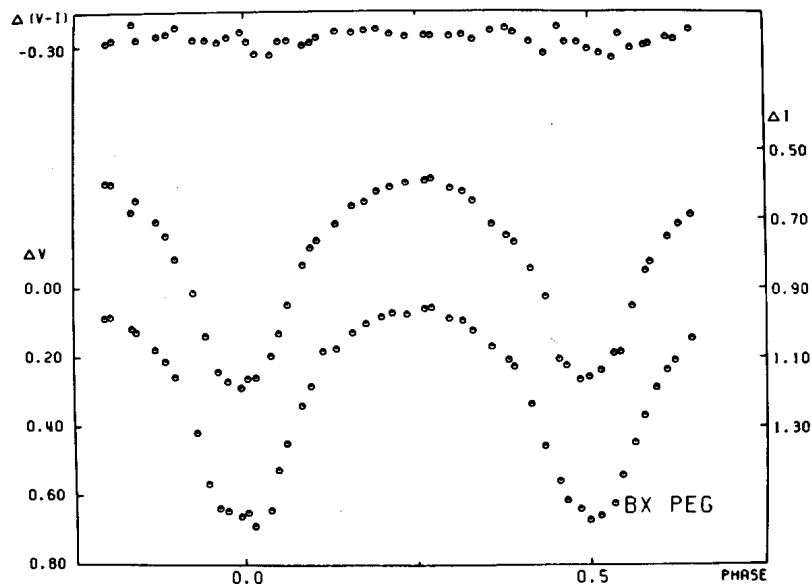


Fig. 1 - Light curves of BX Peg defined by normal points.

The V and I light curves of BX Peg defined by normal points are shown in Figure 1 as  $\Delta m$  versus phase. The large scatter in the observations is due, at least in part, to the variable weather conditions which were present during the observing run.

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