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PHOTOELECTRIC PHOTOMETRY OF UZ Dra

The period of the eclipsing binary UZ Dra= BD+68° 1065 was investigated by Dugan and Wright(1939), Koch and Koch(1962), and Dueball(1964). UZ Dra is being observed spectroscopically by Lacy(1984) who suggested us to observe it photoelectrically. The system has been observed at the Ege University Observatory on 35 nights during the summer seasons of 1984 and 1985. This is going to be the first photoelectric light curve since it is neglected photometrically. The observations were made with the 48 cm Cassegrain reflector equipped with an unrefrigerated EMI 9781A photomultiplier tube and Johnson's standard B,V filters. A total of 522 and 515 individual points were obtained in B and V colours, respectively. The comparison star, BD +68° 1061 showed no significant variations against the check star, BD +68° 1066. The atmospheric extinction coefficients in each colour for every night were calculated from the observations of the comparison star using conventional methods. Then, all the differential observations (variable minus comparison) were corrected for differential extinction.

Primary and secondary times of minima have been obtained three times of each. They are given in Table I. The other times of minima which can be found in literature are also included. The O-C residuals in the Table were calculated with the following light elements:

$$JD\ Hel\ Min\ I = 2446227.4238 + 3^{d}.2613024.E.$$

Table I. Times of minima of UZ Dra.

JD Hel.	Min	Method	E	(O-C)	Ref.
2433570.300	I	vis	-3881	-0.009	1
751.325	II	vis	-3825.5	0.014	1
759.468	I	vis	-3823	0.003	1
34121.466	I	vis	-3712	-0.003	2
134.512	I	vis	-3708	-0.003	2
152.456	II	vis	-3702.5	0.004	2
439.443	II	vis	-3614.5	-0.003	2
488.358	II	vis	-3599.5	-0.008	2
530.751	II	pg	-3586.5	-0.012	3
35380.337	I	vis	-3326	0.005	4
551.552	II	vis	-3273.5	0.002	4
36231.531	I	vis	-3065	-0.001	5
859.334	II	vis	-2872.5	0.001	5
40363.607	I	vis	-1798	0.005	6
376.650	I	vis	-1794	0.003	6
513.632	I	vis	-1752	0.010	6
557.650	II	vis	-1738.5	0.000	6
41570.2834	I	pe(B)	-1428	-0.0006	7
570.2829	I	pe(V)	-1428	-0.0011	7
44461.428	II	vis	-541.5	-0.001	8
510.353	II	vis	-526.5	0.005	9
854.406	I	vis	-421	-0.009	10
929.428	I	pe	-398	0.003	11
45172.399	II	vis	-323.5	0.006	12
534.398	II	vis	-212.5	0.001	13
718.660	I	vis	-156	-0.001	14
821.379	II	vis	-124.5	-0.013	15
878.4650	I	pe(B)	-107	0.0006	16
878.4643	I	pe(V)	-107	-0.0001	16
914.3391	I	pe(B,V)	-96	0.0003	16
958.3660	II	pe(B,V)	-82.5	-0.0004	16
971.4105	II	pe(B,V)	-78.5	-0.0011	16
46191.550	I	vis	-11	0.001	17
227.4238	I	pe(B,V)	0	0.0000	16
245.3608	II	pe(B)	5.5	-0.0002	16
245.3601	II	pe(V)	5.5	-0.0009	16
271.437	II	vis	13.5	-0.014	17

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16. This paper.
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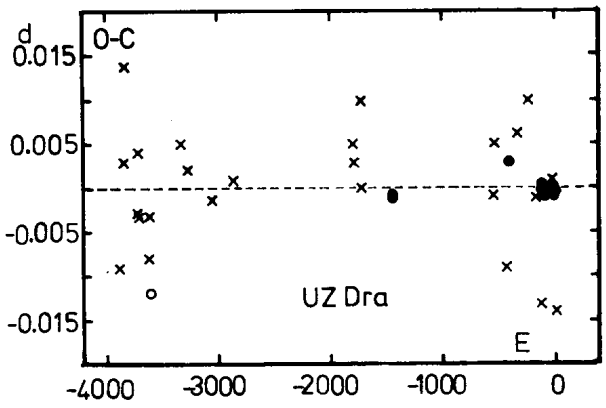

Figure 1 : O-C diagram of UZ Dra. The dots, circles and crosses denote photoelectric, photographic and visual observations, respectively.

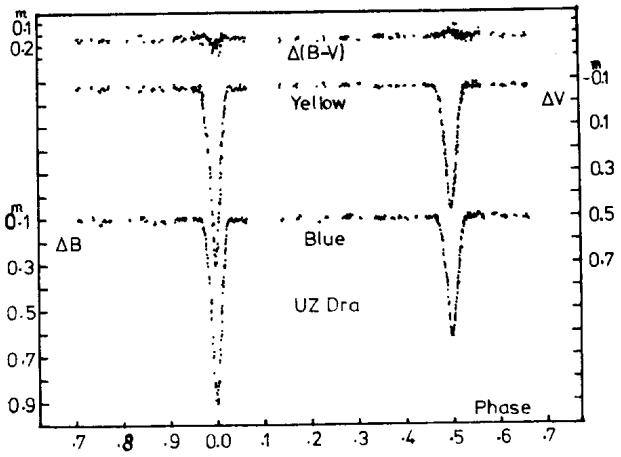

Figure 2 : The light and colour curves of UZ Dra.

The period is taken from GCVS(1969,1985) which seems to fit observations fairly good. Therefore, we didn't attempt to improve it. Also the existing photoelectric times of minima are inadequate for such an attempt. Moreover,the better fit is obtained with the above new epoch which we beleive more accurate one in our times of minima. The O-C diagram is shown in Figure 1.

The light and colour curves of UZ Dra are shown in Figure 2 where the phases have been calculated with the above light elements. The shape of the light curve is typical of Algol type. The observed duration of eclipses are about $D = 4^h 40^m$ which is interestingly short for this period. The amplitudes are about $0^m.795$ and $0^m.765$ at the primary, $0^m.515$ and $0^m.530$ at the secondary minimum in blue and yellow light, respectively. The system is slightly redder at the primary and bluer at the secondary minimum which implies the spectral type of the secondary component is later than that of primary.

The photometric analysis of the light curves is in progress and will be published elsewhere. This work has been partly supported by the Research Foundation of Ege University with the project number 1985/036.

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