Abstract. Photoelectric observations of WX Eridani in B and V filters have been discussed. The maximum magnitudes of the system are $B = 9.770$ and $V = 9.46$. The $B - V$ colours of the components are 0.616 and 0.80 for the primary and the secondary, respectively, while their spectral types are A5 + K0. The period has been found to be constant and its revised value is 0.82327076.

1. Introduction

Variability of the system WX Eridani = BD -1°484 was discovered by Miss Leavitt (Pickering, 1908) from Harvard plates. Hoffmeister (1934) found it to be a variable while examining the Sonneberg plates for new variable stars. Rügemer (1934) confirmed its Algol nature. The period, range of variation, duration of eclipse and light curve have been given by Jenscb (1934). Roman (1956) has reported the spectral type of the system as A7 + F6V. $UBV$ magnitudes and colours have been reported by Drilling (1971). Also, Drilling and Pesch (1973) have done $ubvy$ and $H\beta$ photometry while Hilditch and Hill (1975) have reported the $uvby$ magnitudes at two phases only.

Sarma and Abhyankar (1979) have given complete light curves in $B$ and $V$ filters along with orbital elements for WX Eri by use of the Russell and Merrill method. The normal points given by them have been used by Giuricin and Mardirossian (1981) and also by Russo and Milano (1983) for determining the elements of the system by light-curve synthesis techniques. Sarma and Abhyankar have found WX Eri to be a detached system with the primary components as a $\delta$ Scuti variable pulsating with periods equal to one-fifth and one-sixth of the orbital period, the pulsations being locked to the orbital motion. Giuricin and Mardirossian have also found the system to be detached but not very far from contact configuration. On the other hand, Russo and Milano have reported it to be a semi-detached system. As mentioned by earlier authors, no spectroscopic study of the system exists in the literature. Observations taken during the period October–November 1974 and October–November 1975 are being reported here.

2. Observations

Observations of WX Eri were secured on the 56-cm reflector of the Uttar Pradesh State Observatory through standard $U$, $B$, and $V$ filters, using an unrefrigerated IP21 photomultiplier and employing standard d.c. technique. BD - 1°488 and BD - 1°490
have been observed as comparisons along with the variable. BD – 1°488 has been observed only on nine nights; BD – 1°490 on all the ten nights.

The comparison and the variable stars were also observed on two nights during 1984 with standard stars through the 104-cm telescope of the Observatory using an EMI 6094 S photomultiplier, cooled to –20 °C in order to find their standard magnitudes and colours. These magnitudes and colours are listed in Table I. The last column of the table gives the spectral type as given in the HD Catalogue.

### TABLE I

<table>
<thead>
<tr>
<th>Name</th>
<th>HD</th>
<th>V</th>
<th>B – V</th>
<th>U – B</th>
<th>Sp.</th>
</tr>
</thead>
<tbody>
<tr>
<td>WX Eri</td>
<td>21102</td>
<td>9°56</td>
<td>0°35</td>
<td>0°04</td>
<td>A5</td>
</tr>
<tr>
<td>BD – 1°488</td>
<td>21230</td>
<td>10.33</td>
<td>0.51</td>
<td>0.02</td>
<td>G</td>
</tr>
<tr>
<td>BD – 1°490</td>
<td>21262</td>
<td>9.36</td>
<td>1.12</td>
<td>1.02</td>
<td>K0</td>
</tr>
</tbody>
</table>

The differential standard magnitudes of the system in the sense variable minus comparison (BD – 1°490) are listed in Table II. The standard errors of observations lie in the range 0″006 to 0″048 for B and V filters. The U observations have been taken only on four nights but have not been reported here owing to a large scatter.

### 3. Light Curve and Period

The light and colour curves are shown in Figure 1. The coverage of the light curve is fairly good except for the phase between 0.44 and 0.54. The depths of primary minima in B and V filters are 0″85 and 0″96, respectively. The primary minimum in the V filter shows a constant phase of eclipse for about 24 min. Our light curves also show the kind of stand-stills as found by Sarma and Abhyankar (1979) but only around phase 0.18.

Only on one night were both the ascending and the descending branches of the primary minimum covered, and these have been used to determine the time of primary minimum by the method of Kwee and Van Woerden (1956). The time of primary minimum is found to be J.D. (Hel.) 2442337.3794 ± 0.0001.

All the times of primary minima that we could locate in the literature have been listed in Table III, column 1. These times have been analysed by the method of least squares to find a period for the system. The analysis also indicates that there is no variation in the period. Now an improved ephemeris can be given as

Primary Min. = J.D. (Hel.) 2427531.6807 + 0°82327076E, 

± 0.0016 ± 0.00000010.