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THE PERIOD BEHAVIOUR OF BL ERIDANI

The ephemeris of BL Eri given in the General Catalogue of Variable Star (Kholopov et al. 1985) is

$$\text{Min.I} = \text{HJD}\,2429232.082 + 0^{\text{d}}.1462 \times \text{E} \qquad (1)$$

Later, from the first photoelectric observations Kern and Bookmyer (1986) improved the ephemeris as

$$\text{Min.I} = \text{HJD}\,2444606.5914 + 0^{\text{d}}.41696010 \times \text{E} \qquad (2)$$

The orbital period of the system has been discussed in various studies. Yamasaki et al. (1988) suspected that the orbital period of BL Eri likely changed between 1980 and 1986. Recently, Qingyao et al. (1996) pointed out that the orbital period increased, but property of the period changes is unclear.

The eclipsing binary BL Eri was observed in January 1996 with the 1.0m telescope at Yunnan Observatory in China. BD$-12°0814$ and BD$-12°0821$ were chosen as the comparison and check stars, respectively. From our observations two moments of secondary minima were determined, which are listed in Table 1.

With the ephemeris given by Kern and Bookmyer (1986), we have computed the $(O-C)_1$ values of a number of times of minima we found in references and have listed in Table 2. Using these $(O-C)_1$ values we derived the O$-$C diagram displayed in Figure 1. In Figure 1 a systematic trend is seen: the period has been increasing continuously. In order to determine the rate of period change, all the minimum times were introduced into a quadratic least squares solution which resulted in:

$$\begin{array}{lll} \text{Min.I} = \text{HJD}\,2444606.5833 + 0^{\text{d}}.41691786 \times \text{E} + 0^{\text{d}}.000000004286 \times \text{E}^2 & & (3) \\ \pm 3 \qquad\qquad \pm 6 \qquad\qquad\qquad\qquad \pm 5 & & \end{array}$$

and the rate of period change: dP/dE=0.000000004286 day. With this latter ephemeris we computed the $(O-C)_2$ values in Table 2. Comparing the $(O-C)_1$ values with the $(O-C)_2$ values in Table 2 the quadratic ephemeris (3) has smaller deviation

Table 1. Moments of minimum light of BL Eri

JD(Hel.)	Error(day)	Min.	Filters
2450096.6707	0.0004	II	B,V
2450099.5889	0.0005	II	B,V

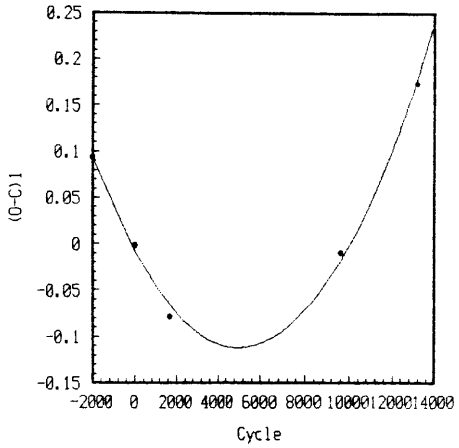

Figure 1. The O−C diagram plotted using the linear ephemeris (2), the solid curve represents the quadratic fit

Table 2

JD(Hel.) 2400000+	E	$(O-C)_1$	$(O-C)_2$	Source
44603.6709	−7.0	−0.0018	+0.0060	Kern and Bookmyer(1986)
44604.7146	−4.5	−0.0008	+0.0075	Kern and Bookmyer(1986)
44606.5894	0.0	−0.0020	+0.0061	Kern and Bookmyer(1986)
44607.6328	2.5	−0.0010	+0.0072	Kern and Bookmyer(1986)
45298.8745	1660.5	−0.0791	−0.0127	Yamasaki et al.(1988)
45299.9170	1663.0	−0.0790	−0.0125	Yamasaki et al.(1988)
45300.9599	1665.5	−0.0785	−0.0120	Yamasaki et al.(1988)
48602.1026	9582.5	−0.0090	+0.0103	Qingyao et al.(1994)
48603.1452	9585.0	−0.0090	+0.0010	Qingyao et al.(1994)
50096.6707	13166.5	+0.1714	−0.0047	Present paper
50099.5889	13173.5	+0.1736	−0.0057	Present paper

than the linear one (2), this point could also be seen from the sums of square of the deviations: $\sum_i W^2_{(O-C)_{1_i}} = 0.07928, \sum_i W^2_{(O-C)_{2_i}} = 0.00091.$

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