COMMISSIONS 27 AND 42 OF THE IAU
INFORMATION BULLETIN ON VARIABLE STARS

Number 5074

Konkoly Observatory
Budapest
11 May 2001

HU ISSN 0374 – 0676

CCD LIGHT CURVE AND NEW ELEMENTS OF BE Eri

MARTIGNONI, MASSIMILIANO

Via don Minzoni 26, I-20020 Magnago, Milano, Italy, maxmartignoni@libero.it

Name of the object:
BE Eri (= HV 10408 = GSC 4739.0640 = USNO A2.0 0825.01095819)

Equatorial coordinates:	**Equinox:**
R.A.= $4^{\rm h}38^{\rm m}3\overset{\rm s}{.}44$ **DEC.**= $-1^\circ59'44\overset{''}{.}3$	2000

Observatory and telescope:
Private station in Busto Arsizio, Italy, 0.21-m Newton ($F/5.0$)

Detector:	DTA Seti 245C CCD Camera

Filter(s):	None

Comparison star(s):	GSC 4739.0650 = USNO A2.0 0825.01095247 ($11\overset{\rm m}{.}6$ R)

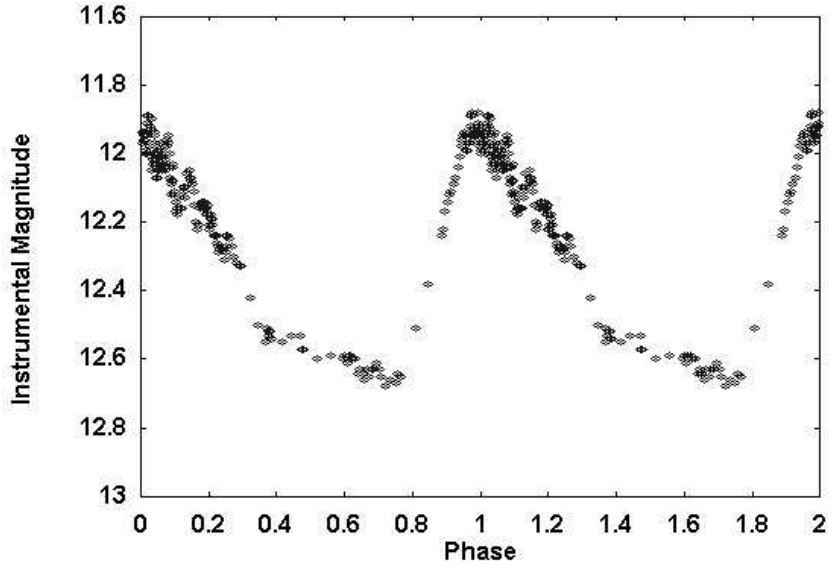

Figure 1. Unfiltered CCD light curve of BE Eri

Table 2: Times of maxima

HJD		$E_{(1)}$	$(O-C)_{(1)}$	$E_{(2)}$	$(O-C)_{(2)}$	Observer/Reference
2439055.337	ptg	−2657	−0.079	−2657	−0.106	Pop & Todoran (1973)
2439805.345	ptg	−1363	0.004	−1363	−0.016	”
2440249.280	ptg	−597	0.011	−597	−0.004	”
2440288.157	ptg	−530	0.059	−530	0.044	”
2440289.306	ptg	−528	0.049	−528	0.034	”
2440595.300	ptg	0	0.046	0	0.034	”
2440617.324	ptg	38	0.047	38	0.036	”
2440624.245	ptg	50	0.014	50	0.002	”
2440966.190	ptg	640	0.030	640	0.022	”
2441299.404	ptg	1215	0.009	1215	0.003	”
2441310.434	ptg	1234	0.028	1234	0.022	”
2441332.387	ptg	1272	−0.042	1272	−0.047	”
2441350.386	ptg	1303	−0.009	1303	−0.014	”
2441353.300	ptg	1308	0.008	1308	0.003	”
2449998.790	CCD	16226	−0.080	16226	−0.004	Schmidt & Seth (1996)
2451169.442	CCD	18246	−0.099	18246	−0.012	Martignoni, this paper
2451941.395	CCD	19578	−0.093	19578	0.002	”

Check star(s):	GSC 4739.0676 = USNO A2.0 0825.01096410 ($11\overset{\mathrm{m}}{.}9$ R); GSC 4739.0638 = USNO A2.0 0825.01094601 ($12\overset{\mathrm{m}}{.}1$ R)

Transformed to a standard system:	No

Availability of the data:
Through IBVS Web-site as file 5074-t1.txt

Type of variability:	RRAB

Remarks:

BE Eri was discovered as variable stars by Hanley and Shapley (1940): they found the RR Lyrae nature and gave first period of variation. Afterwards the variable was investigated by Pop and Todoran (1973) who published times of maxima and the following linear elements of variation:

$$\text{Max} = \text{HJD } 2440595.254 + 0\overset{\mathrm{d}}{.}57954 \times E. \qquad (1)$$

They were able also to point out a Blazhko's effect with an approximate periodicity of $94P$. Further time of maximum was published by Schmidt and Seth (1996). We observed BE Eri from JD 2450169 to JD 2451941 obtaining 230 measures: from the light curve produced (Fig. 1), two new time of maxima were determined and, by means of timings found in the literature, we were able to derived the following new linear elements of variation calculated by the least squares method:

$$\begin{aligned} \text{Max} = \text{HJD } 2440595.266 &+ 0\overset{\mathrm{d}}{.}5795345 \times E. \\ &\pm 0.009 \pm 0.0000013 \end{aligned} \qquad (2)$$

Published and new times of maximum light are reported in Table 2.

References:

Hanley, C.M. and Shapley, H., 1940, *Bulletin Harvard College Observatory*, 913
Pop, V. and Todoran, I., 1973, *Studii si Cercetari de Astronomie*, **18**, 67
Schmidt, E.G. and Seth, A., 1996, *Astronomical Journal*, **112**, 2769