

## ER ORI : A VERY STABLE PERIOD EW-TYPE VARIABLE STAR

**Summary:** about 300 visual estimates of ER Ori, an eclipsing binary of EW type, confirm the validity of ephemeris (2). The compositage of this very stable period variable star is presented in this paper.

### Introduction

ER Ori is an eclipsing binary of EW type with light variation between 9.28-10.01 mag. Ephemerides in literature, concerning primary minimum, are following reported:

$$\text{Min. I (GCVS 85)} = 2441626.415 + 0.4233987 * E \quad (1)$$

$$\text{Min. I (see note 1)} = 2442446.541 + 0.4233993 * E \quad (2)$$

Ephemeris (1) is present in GEOS FT03-FT05 too.

### Results and discussion

I collected about 300 visual estimates of ER Ori for 1994-1995 using GEOS chart C42. In the next table I am reporting 10 heliocentric times of light minimum calculated processing visual observations by SOP<sup>(2)</sup> program, together with O-C values according to previous ephemerides and, at last, the type of observed minimum, primary or secondary:

Tab.1 : ER Ori minima in 1994-1995

DATE	U.T.	HJD	O-C(1)	O-C(2)	TYPE
13 Nov 94	21.01	49670.376 ± 0.003	0.021	0.008	II
14 Nov 94	22.22	49671.432 ± 0.003	0.019	0.006	I
2 Dec 94	21.49	49689.409 ± 0.003	0.001	- 0.012	II
26 Dec 94	20.12	49713.342 ± 0.009	0.012	- 0.001	I
9 Jan 95	19.42	49727.321 ± 0.010	0.019	0.006	I
20 Jan 95	19.54	49738.329 ± 0.012	0.019	0.006	I
29 Jan 95	22.15	49747.427 ± 0.002	0.013	0.000	II
1 Feb 95	21.22	49750.390 ± 0.004	0.012	- 0.001	II
6 Feb 95	18.16	49755.261 ± 0.003	0.014	0.001	I
19 Feb 95	21.13	49768.384 ± 0.003	0.012	- 0.001	I

It is self-evident that ephemeris (1) is late in foreseeing times of minima. Mean O-Cs confirm, instead, the validity of ephemeris (2), demonstrating the period has not changed from almost 20 years:

$$O-C(1)_{\text{mean}} = 0.014 \pm 0.005 \text{ day}$$

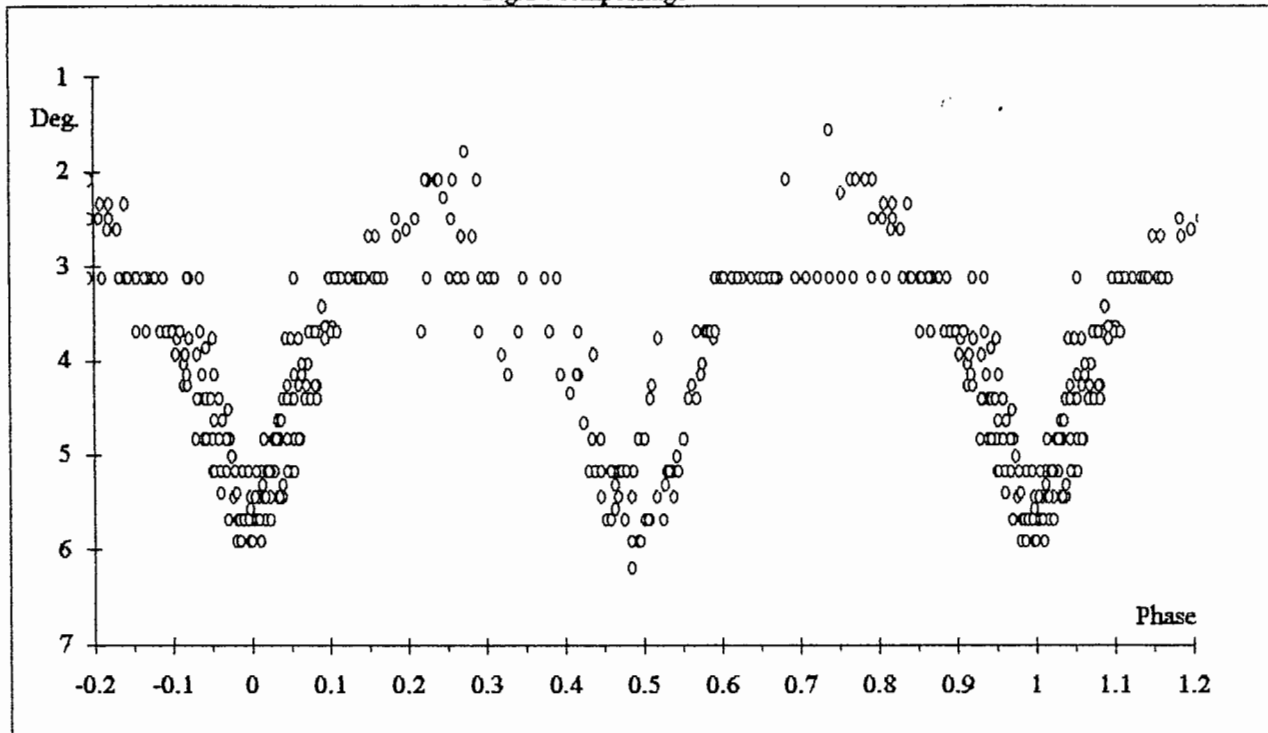
$$O-C(2)_{\text{mean}} = 0.001 \pm 0.005 \text{ day}$$

Therefore ephemeris (1), must be replaced by ephemeris (2) in the GEOS FTs.

### The compositage

Visual estimates carried out in 1994-1995 was used to plot a *compositage*. All data were phased according to ephemeris (2): the result is shown in figure 1.

Fig.1 : compositage of ER Ori



### Conclusions

ER Ori seems to have a very stable period because observative data of 1994-95 confirm ephemeris(2). Furthermore the *compositage* obtained by these visual data shows the symmetry of the light curve and of binary system's mutual eclipses..

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### References:

- (1) P.BARUFFETTI - note on "*Variabilia*" in *l'Astronomia*, **118** (1992)
- (2) A.GASPANI - *Stochastic Optimization Program*, **5** (priv.comm.)