YY Eri: a constant period

YY Eri is an eclipsing star with coordinates:

AR : 04 h 12 m 09 s DEC : -10° 27.9' (2000)

The comparison stars that I have used are;

	SAO/HD	SAOC magnitude	Personal sequence
A	149503 / 27093	7.9	7.83
B	149455 / 26650	8.2	8.32
C	149414 /	9.0	8.94

This star shows a secondary minima at magnitude 8.7 (as deep as the primary minima). Moreover the period varies slightly.

I analyzed only 39 observations from 1996 to 1998 (five primary minima observed). The heliocentric date for these minima are:

2450452.385
2450461.353
2450486.437
2450506.366
2450868.380

The parameters of the star by CGVS 1985 are:

Type ; EW/KW Range ; 8.1-8.8 v Spect. G5

Base = 2441581.624 Period = 0.32149415

I have tried MPMA, MELSP, PDM, and linear regression to find the period. Only PDM gives a "good" period (exactly the double of real period).

	GCVS		MPMA		MELSP		PDM	
	E	O-C (1)	E	O-C (2)	E	O-C (3)	E	O-C (4)
452.385	1	0.023	1	-0.038	1	-0.094	1	-0.022
461.353	29	-0.011	26	-0.004	28	-0.060	15	-0.011
486.437	107	-0.004	96	0.065	103	0.209	54	-0.004
506.366	169	-0.008	152	-0.018	164	-0.046	85	-0.008
868.380	1295	0.002	1165	-0.002	1258	-0.010	648	0.001

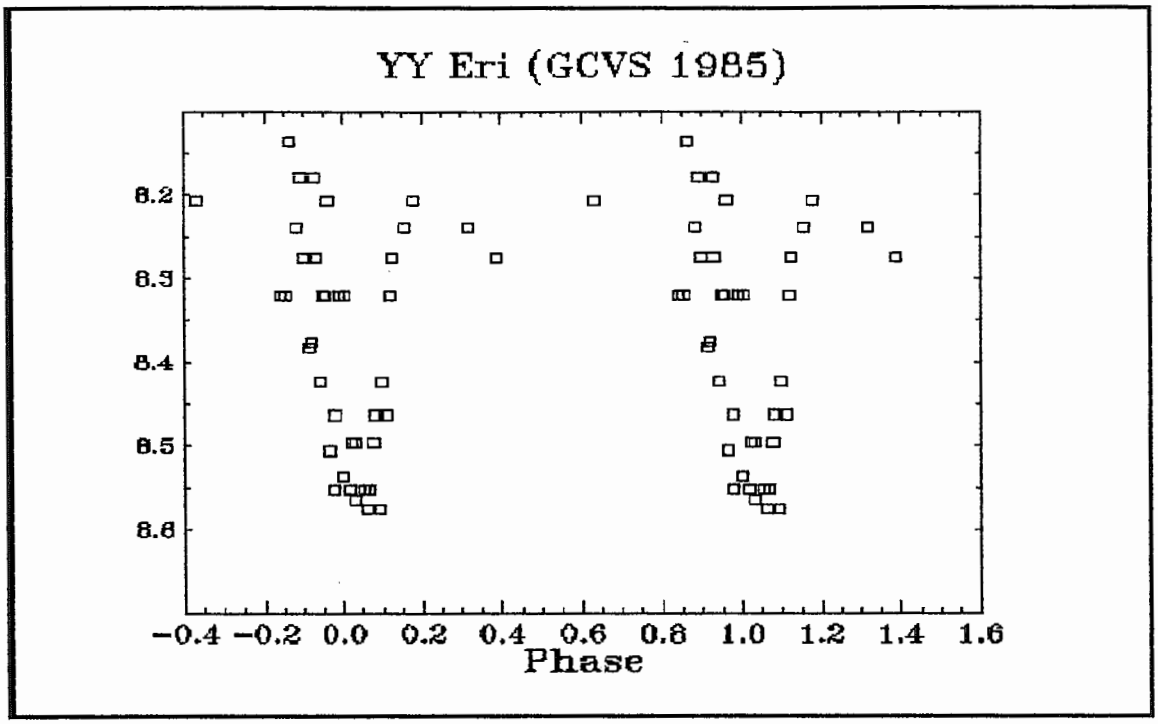
where, after a initial period for every method the calculation of O-C is realized on the period and base obtained by linear regression. So the period after regression are:

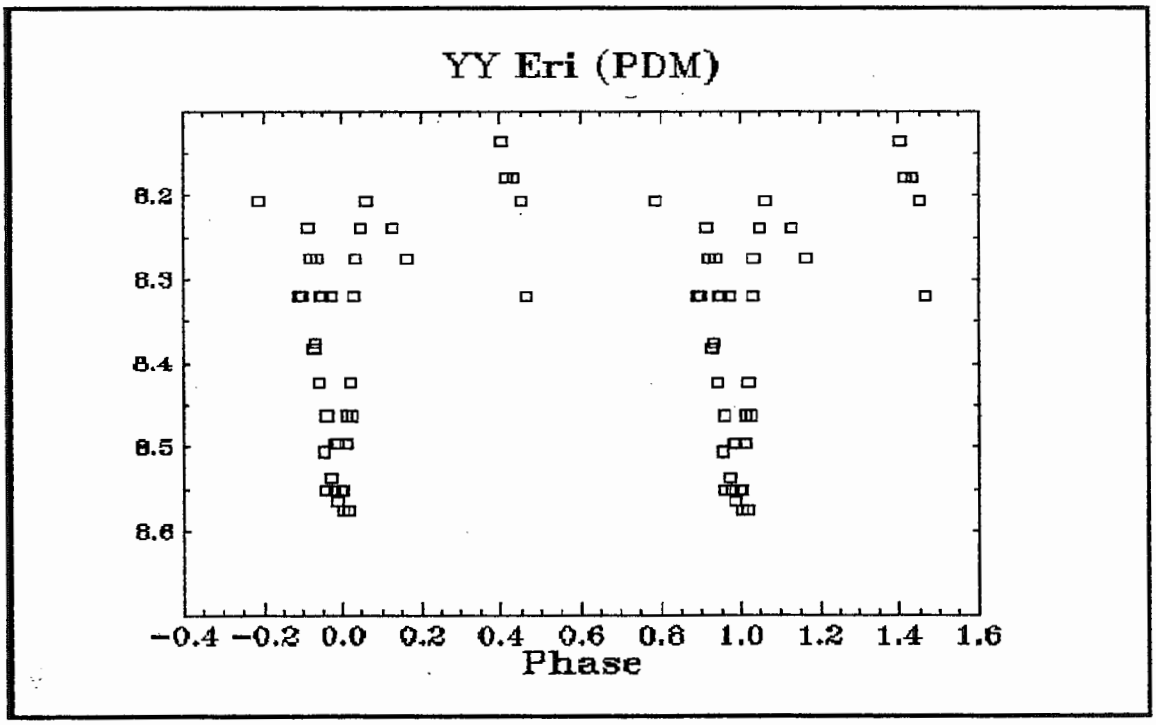
(1)GCVS 2450452.041 + (0.321495851)*E
(2)MPMA 2450452.066 + (0.357353034)*E
(3)MELSP 2450452.148 + (0.330875788)*E
(4)PDM 2450451.719 + (0.642991702)*E

All periods have regression coefficients very near the unity (at first, these periods could be correct, however the large O-C in (2) and (3) indicate a worse adjust for these periods).

When we realize the compositions for every period we can see that only the periods (1) and (4) are acceptable. The period from PDM is the double of the real period.

The compositions for (1) and (4) are respectively;





Obviously the real period is (1) and so this seems constant along time.

References;

GCVS 1985
Webb Society Deep-Sky Observer´s Handbook. Volume 8: Variable Stars

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