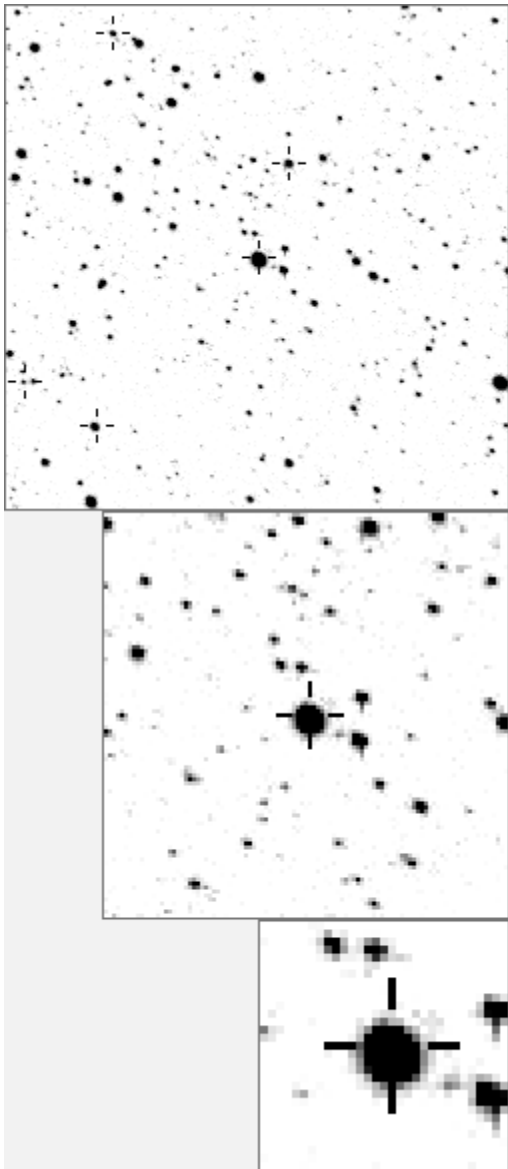


a00178



variables& brighter stars			
l		m	O 178 v
e	h		a 338
	g	d	b 1048
			c 2177
f		i	d 2319
	c		e 2507
		O	f 2540 v
		k	g 2670
			h 3660
			i 3782 v
			j 3998 v
n		a	k 4372
	j		l 10709 v
			m 14032 v
	b		n 21133 v
-----			
	g	a	O 178 v
			a 3782 v
			b 4580
		i	c 5739
			d 7132
d	m	h	e 9630
		e	f 10327
		O	g 15172
		b	h 15722
			i 16705
		n	f j 17864
			k 17901
			l 17972
	l		m 19318
			n 19466

Note: Bitmap sizes are 251, 101 and 31 pixels square, South up. The keys to the right refer to the 1<sup>st</sup> two bitmaps. The star numbers in the key are those in my catalogue 'starlistA'. Stars marked with a cross have been found to be variable.

**Data and comments on star a00178**

SWid: a00178 / **USNO id: 3593 128001 / other id: TYC 3593-1280-1**

Co-ordinates, x,y in image z1051: 3104.4 2905.3

J2000 sky co-ordinates: **21 12 28.44 47 3 14.47**

CMC r'magnitude and 2MASS J,H,K magnitudes: 9.667 9.233 9.22 9.199

USNO B1.0 magnitudes, B1,R1,B2,R2,I2 9.89 9.63 9.8 9.62 9.54

Misc comments : no longer thought var

I left that there because I'm amazed I could have written that. This is clearly an eb of some kind with a well defined complete minimum in 2806, a near one in 2541 and bits in 2497 2821 and 2865, see book 21.

I make the period 14.72667. To ref a338, magm is 9.64, min 9.747, ie: magr 0.107 this in 'v', other levels a bit out. Some levelling might be in order here. No sign of a secondary yet. It's more level but noisier to very close 4580 I changed stepscolour from 0.431 10374deg to

0.44 9672deg, which reduced the a span from 44 to 27mmag but don't know if that's right of course. This star is Tycho 1393 1280-1 , said to have B-V of 0.169 so a colour temperature of about 8900 deg K

The plot looks a bit noisy, doing the near 1048 to 338 I get the same noise tho it's fainter of course but by using 311/378 one can see that the noise is v similar

Comparison reference star(s) co-ordinates:

**a338: 21 12 6.61 46 49 29.38**

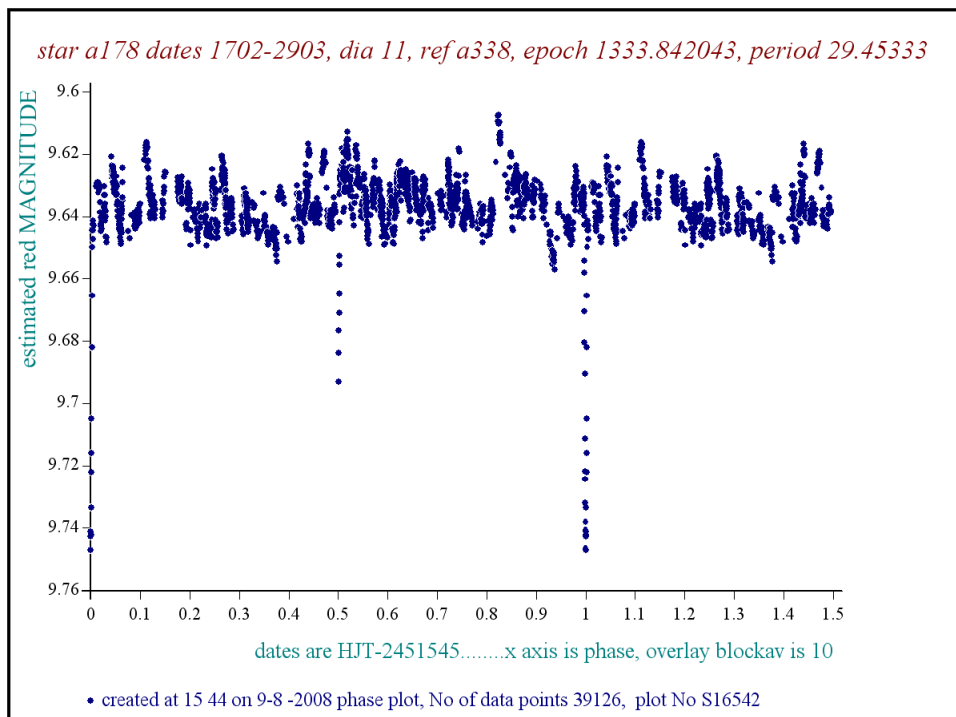
**a60: 21 12 56.69 47 5 36.1**

**a813: 21 12 37.77 46 57 15.28**

Reminder:

**All dates, JD and HJD are from Jan 1<sup>st</sup> 2000**

season 1: dates 1316 to 1553 is 9/8/2003 to 3/4/2004	<b>(a)</b>
season 2: dates 1696 to 1838 is 23/8/2004 to 12/01/2005	<b>(z)</b>
season 3: dates 2085 to 2177 is 16/9/2005 to 17/12/2005	<b>(y)</b>
season 4: dates 2442 to 2755 is 8/9/2006 to 19/7/2007	<b>(w)</b>
season 5: dates 2772 to 2903 is 4/8/2007 to 13/12/2007	<b>(v)</b>
season 6: dates 2930 to 3266 is 9/1/2008 to 10/12/2008	<b>(u)</b>
season 7: dates 3403 to 3539 is 26/4/2009 to 10/9/2009	<b>(t)</b>

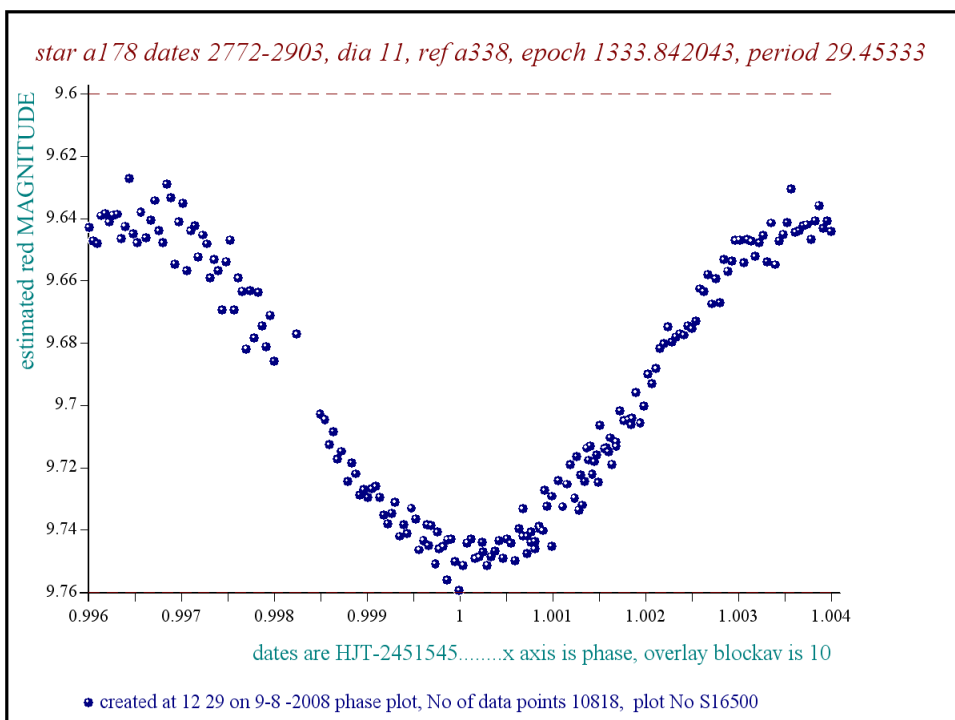
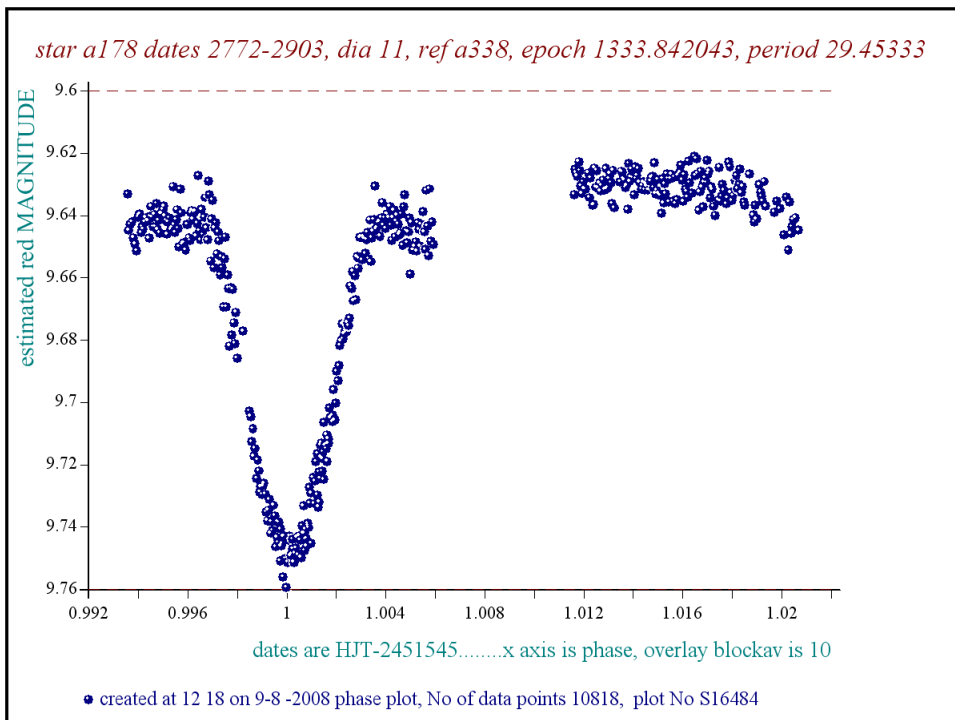


There is not enough data yet to decide between a period of 29.45333 or half of that. The plot above looks to have a secondary at 0.5 phase but as far as can be determined it is identical to the one at phase zero. Careful study (below) of the magnified phase plots of a

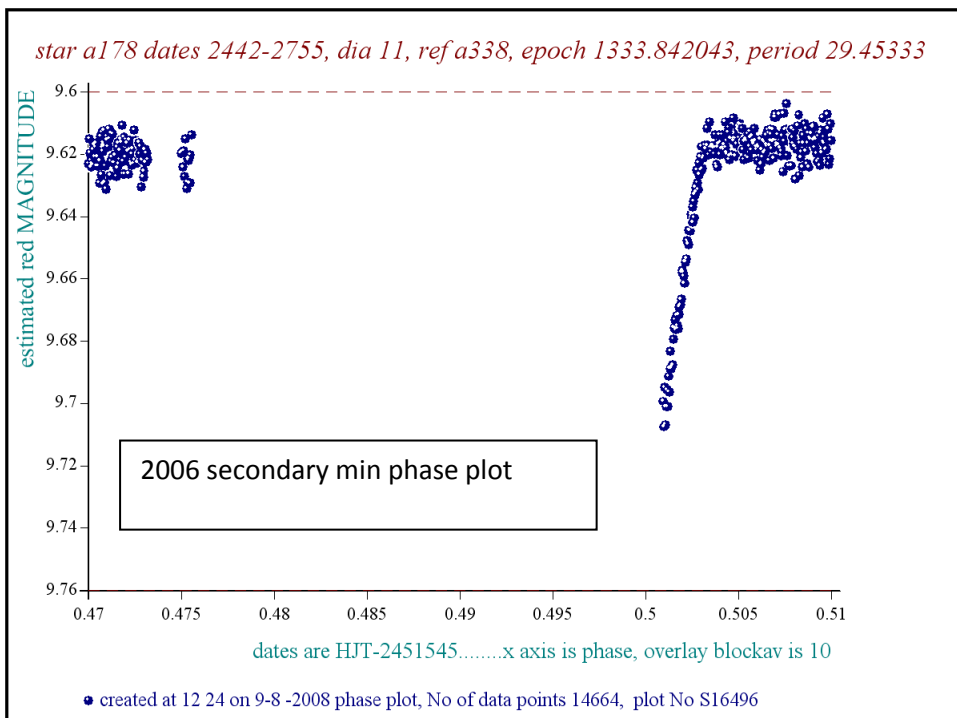
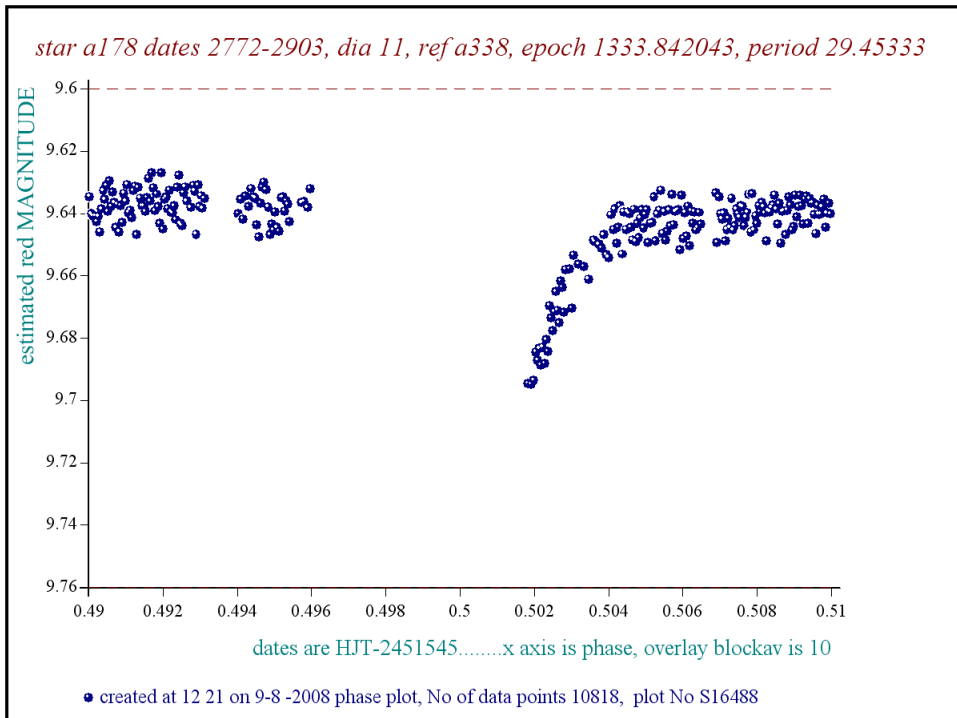
complete 'primary' and two incomplete secondaries show nearly identical curves. The phase shift on egress over the last 83 millimagnitudes of the 2006 'secondary' (from 9.70 to 9.617) is 0.00213. On the 'primary' the same 83mmags (from 9.726 to 9.643) takes 0.00214 phase. The level difference is almost certainly due to the preliminary nature of the photometry of the relatively poor data in parts of 2006.

By predicting the near misses from the known minima one might hope to distinguish between the longer and shorter periods but because of the narrow minima they all completely miss the 199 data sets collected to the end of 2007. Only one full and four partial minima are seen.

Note 01-01-2017- more data from 2008 and 2009 will be added later plus CMC mags



The width of the minimum is very close to 0.006 phase, 0.177 days or 4.2 hours.



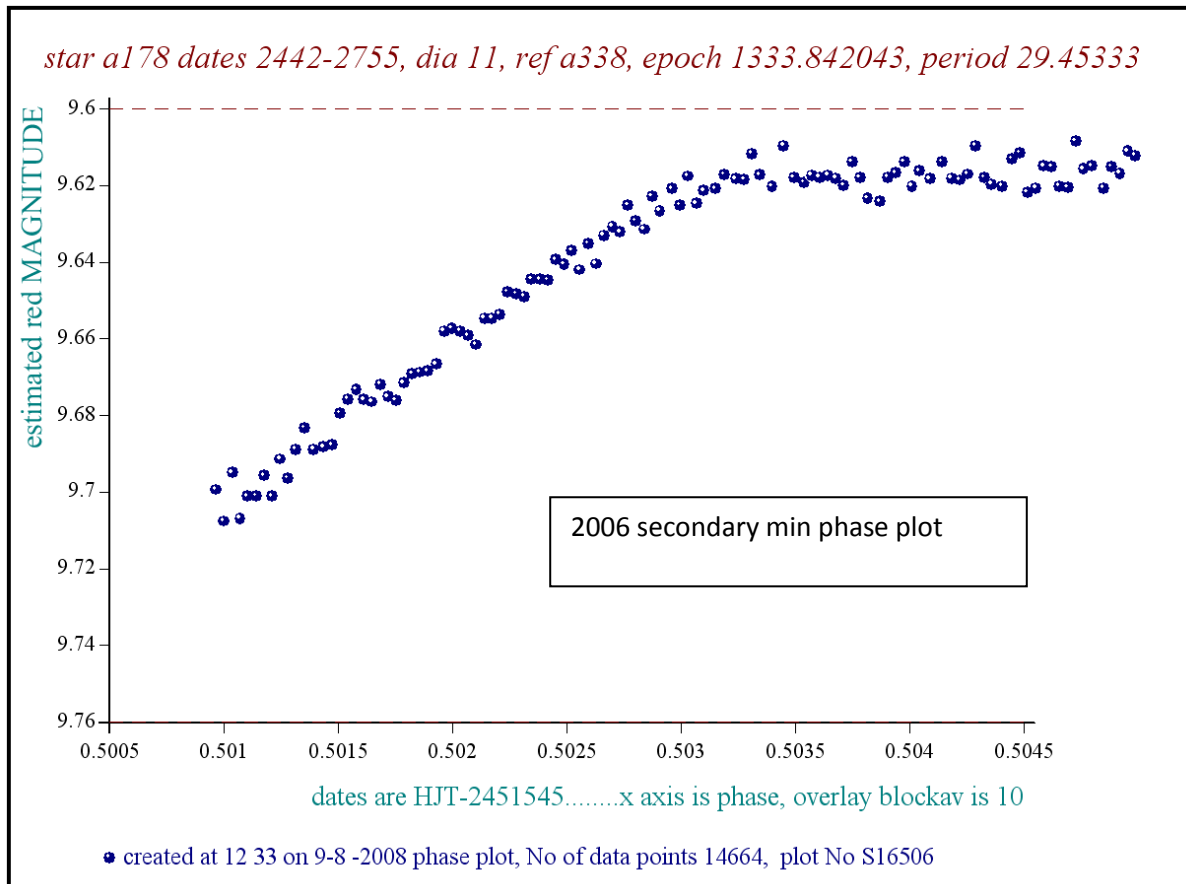
The only data collected so far for the 'secondary' is shown above, slightly more was obtained in 2006 than in 2007 but both only on egress. The 2006 plot is shown magnified below. The transition out of the eclipse is extremely sharp.

The depth of the only available minimum is 0.11 magnitudes.

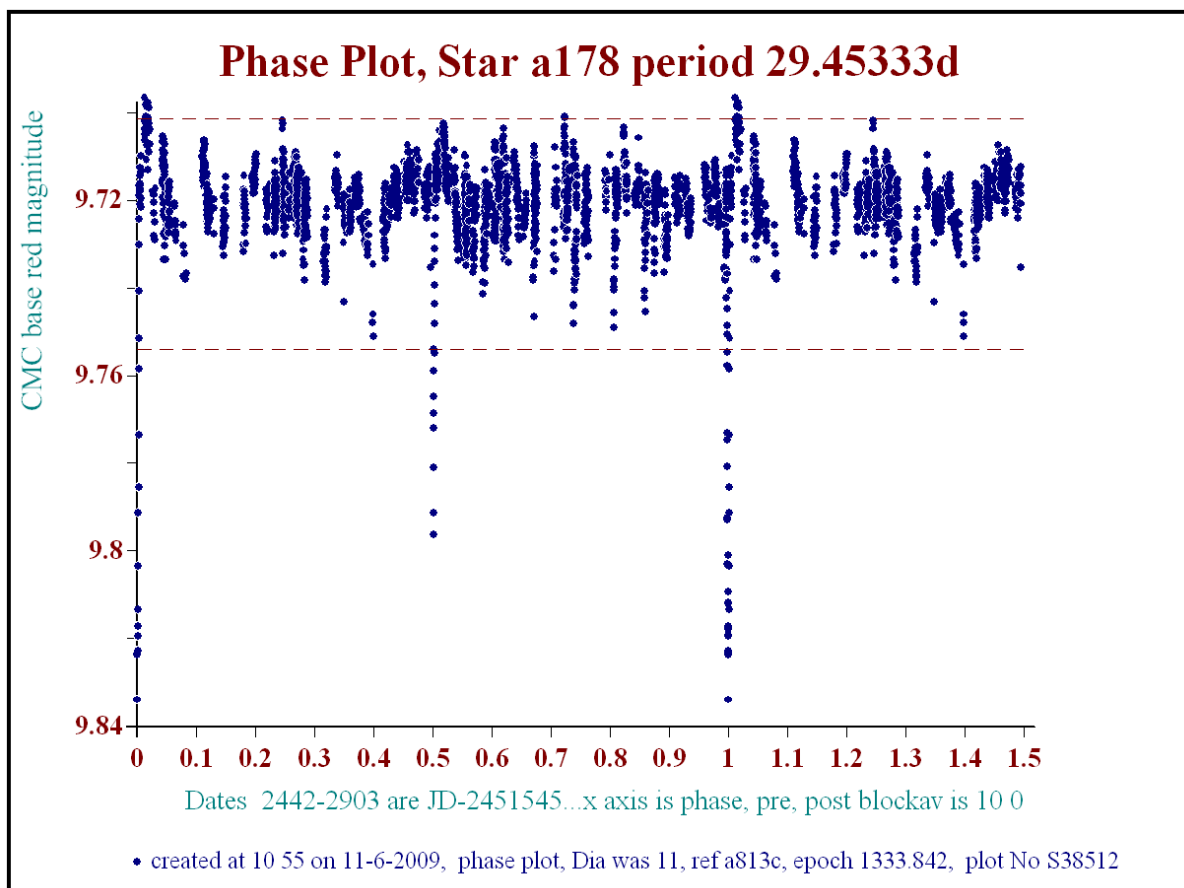
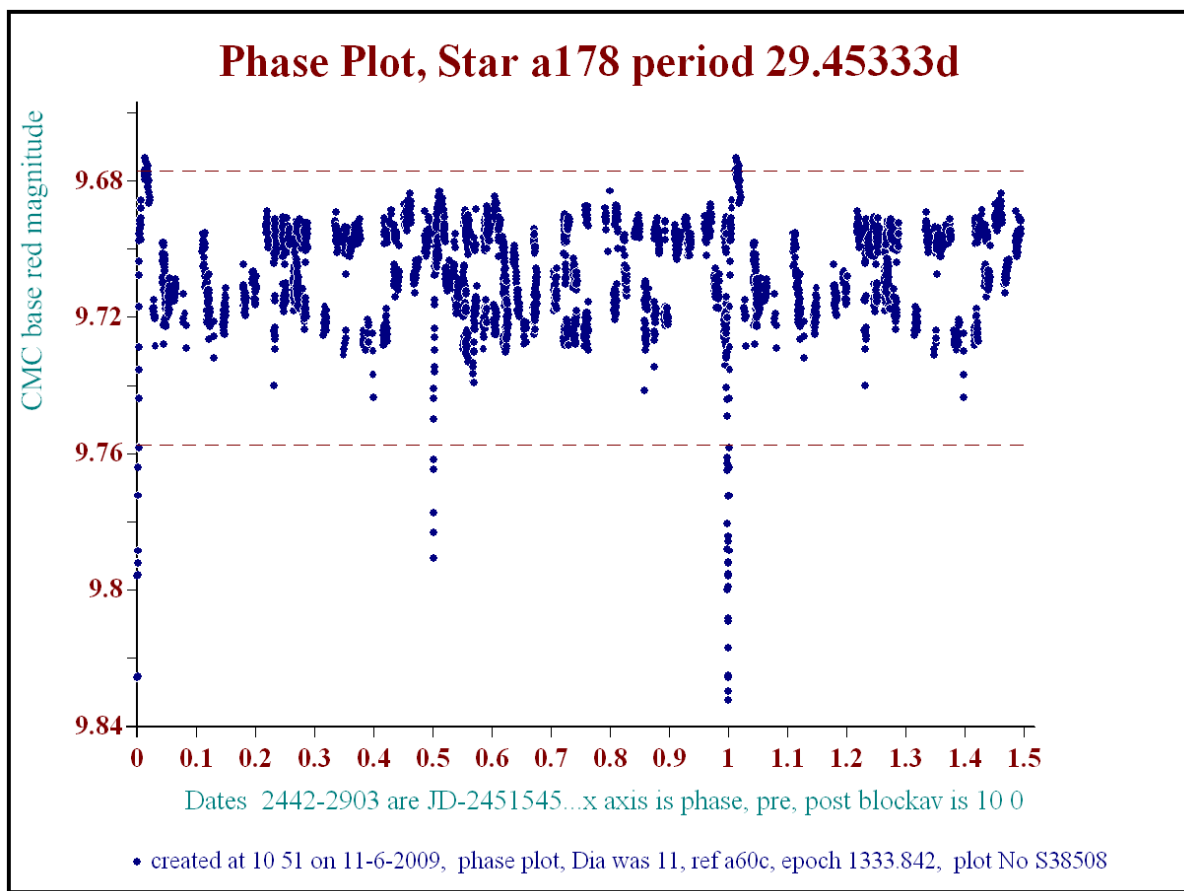
Case1: If the period is the long one then we have two very similar stars showing a partial eclipse.

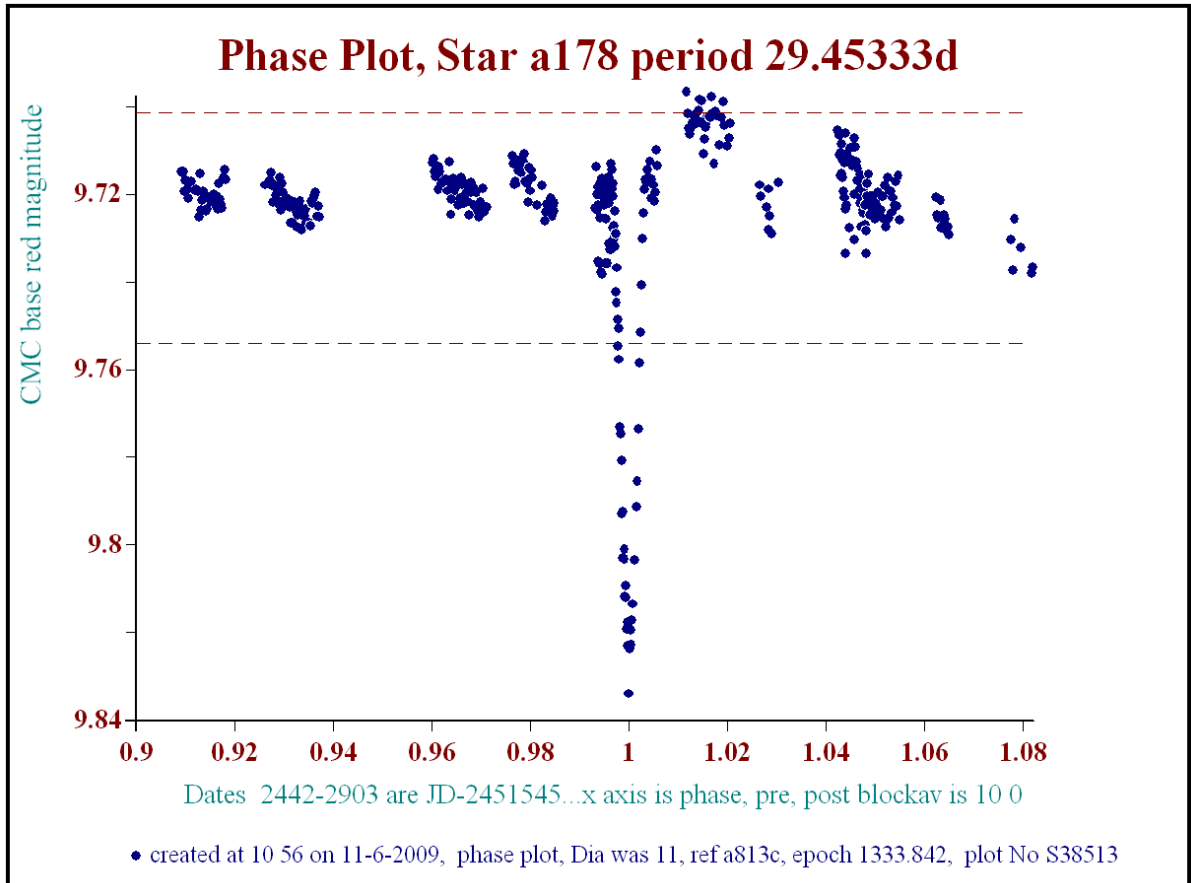
Case2: If the shorter period is the true one then, as no secondary can be detected, the two stars must be very different in colour. This star is classified in the Tycho catalogue as 3593 1280-1 with a

B-V of 0.169 or a colour temperature of 8900 deg-K. In this case this is the smaller, hotter and brighter companion to a large faint red star, each slightly eclipsing the other every 14 days.



Other refs, no post averaging





uncompensated diurnal variations can clearly be seen here