



XV Международная астрономическая олимпиада
XV International Astronomy Olympiad

Крым, Судак

16 – 24. X. 2010

Sudak, Crimea

язык language	<u>English</u>
язык language	<u>Русский</u>

Practical round. Answers for problem 6 to solve

Ответы к задаче 6 практического тура

Table 1.
Таблица 1.

	(LT)	(UT)
T_b	21:15	18:15
T_e	04:00	01:00

Table 2.
Таблица 2.

No	17, 50, 88, 106, 171, 216, 265, 337, 411
	$\alpha = 2^{\text{h}}30^{\text{m}}$ $\delta = 61^{\circ}30'$
DD.MM	12.08 – 13.08 ($\pm 1^{\text{d}}$)
T_b	21:00 – 22:00
T_e	04:00 – 05:00

Table 3.
Таблица 3.

№	h_r	lm	N	T_{eff}	F	ZHR
1	23	5,7	12	0,75	1,022	86
2	29	6,5	19	0,83	1	48
3	37	6,5	40	0,83	1	80
4	47	6,5	48	0,83	1,033	82
5	54	6,5	65	0,83	1	96
6	63	6,2	66	1	1	98

Practical round. Answers for problem 7. Cataclysmic variable

7.1. 2004

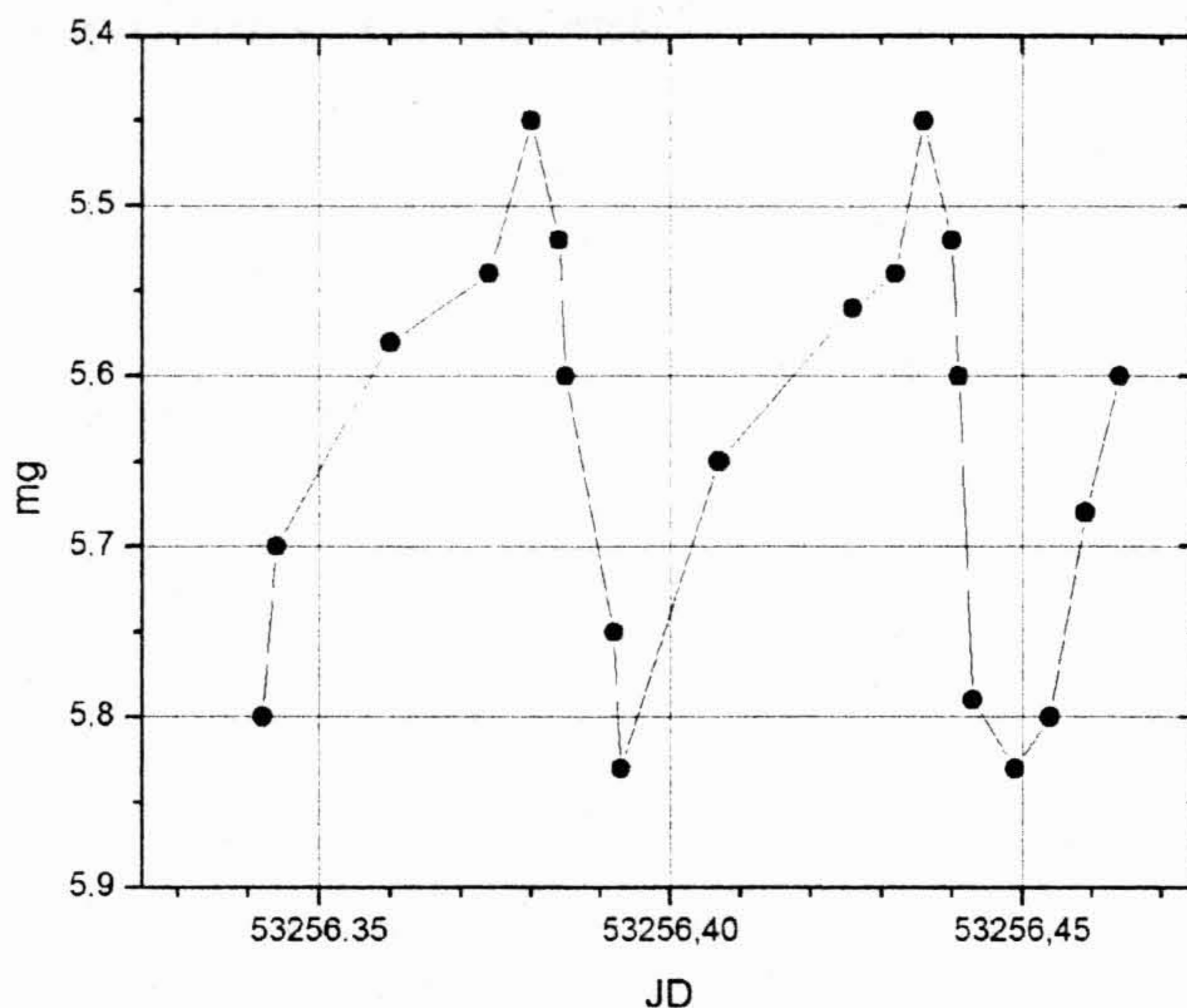
7.2. Mg system = Mg comparison (4.6^m) + Mg relative (2nd column in Table 1.)

7.3.

JD _{max}	Mg _{max}	JD _{min}	Mg _{min}
53256.38	5.45 (0.85)	53256.393	5.825 (1.23)
53256.436	5.45 (0.85)	53256.449	5.825 (1.23)

7.4. $P_{orb} = 0.056^d = 80.64^m$

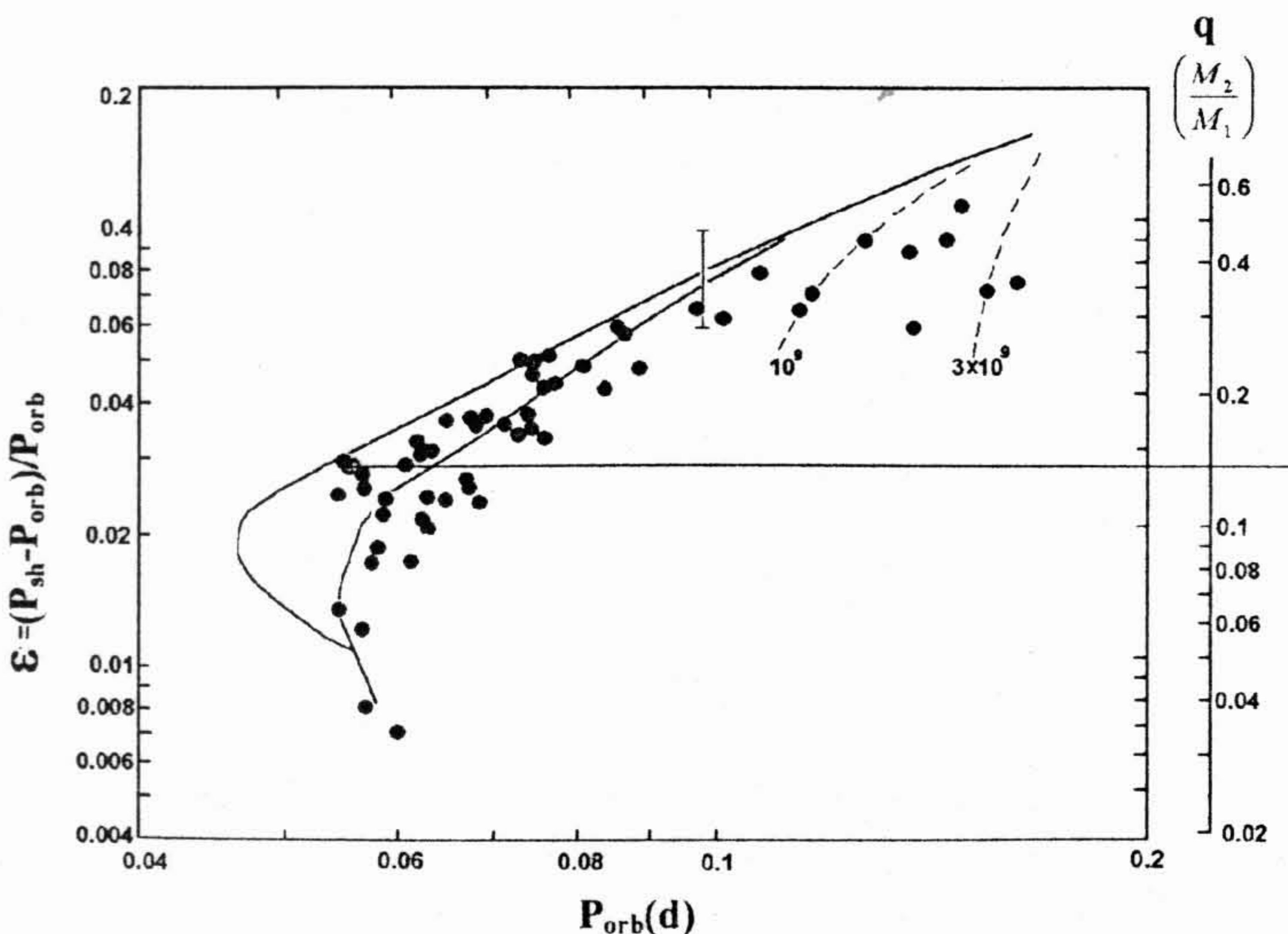
7.5.



JD 2400000 + ...	Mg	Phasa
53256,337		0
53256,342	1,2	0,08929
53256,344	1,1	0,125
53256,36	0,98	0,41071
53256,374	0,94	0,66071
53256,38	0,85	0,76786
53256,384	0,92	0,83929
53256,385	1	0,85714
53256,392	1,15	0,98214
53256,393	1,23	1
53256,407	1,05	0,25

JD 2400000 + ...	Mg	Phasa
53256,426	0,96	0,58929
53256,432	0,94	0,69643
53256,436	0,85	0,76786
53256,44	0,92	0,83929
53256,441	1	0,85714
53256,443	1,19	0,89286
53256,449	1,23	0
53256,454	1,2	0,08929
53256,459	1,08	0,17857
53256,464	1	0,26786

7.6. $P_{sb} = P_{orb} + 2.3^m = 80.64^m + 2.3^m = 82.94^m = 0.0576^d$,
 $\varepsilon = (0.058 - 0.056) / 0.056 = 0.028$.



Ratio of masses of the components:

$$M_2/M_1 = 0.15 \pm 0.01.$$

