

6615 PLUTARCHOS, A SUSPECT BINARY ASTEROID.

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6615 Plutarchos was observed from Leura and Carbuncle Hill Observatories during the month of April and May 2007. The synodic period is reported to be $2.3247\text{h} \pm 0.0001\text{h}$. This asteroid also has a partial solution as a binary with asynchronous orbital period of $40.0\text{h} \pm 0.1\text{h}$.

6615 Plutarchos was selected from the list of suggested targets for the Photometric Survey of Asynchronous Binary Asteroids, Pravec(2006). Observations were started on the 10th of April 2007 from Leura Observatory. By then it had passed opposition and was receding. Unfortunately, since the target was fading, it was only possible with the available instruments to follow it until the end of May when the search was called off due to failure to reach the level of detection required by the survey. All nightly observations were sent to Pravec for analysis for signs of attenuation of more than 0.02 magnitude as can be seen in Fig. 2. In this lightcurve, the attenuations are plotted into a half orbit for clarity. In a near-zero eccentricity orbit, these attenuations are caused by a primary and secondary event. In addition to that, at moderate solar phase angle, when these events occurred, the incidences of both occultations and eclipses were unlikely. This, in effect, explained the similarity in the depth of the attenuations observed on the three occasions. During this recent campaign, the three attenuations that were captured consisted of two transit events and one occultation event or vice versa. Therefore, from the above observations, it was deduced that the orbital period is $40.0\text{h} \pm 0.1\text{h}$ and the amplitude of the events is 0.07 mag. An orbital period of 20h or less is not likely due to geometrical constraints. The lightcurve in Fig. 1 shows the rotation period of the primary body to be $2.3247\text{h} \pm 0.0001\text{h}$ with an amplitude of $0.06\text{m} \pm 0.01\text{m}$. September 2008 and February 2010 are the dates of the next close approaches of this asteroid. Observers are therefore encouraged to observe this object at those times

The location and instruments used at Leura Observatory have been described previously by

Oey(2006). Pray joined in the search when it was determined that the asteroid was a suspect binary. The contributed data are shown as session 8 and 9. Carbuncle Hill Observatory's location and its instrumentation were documented before in Pray et al.(2006).

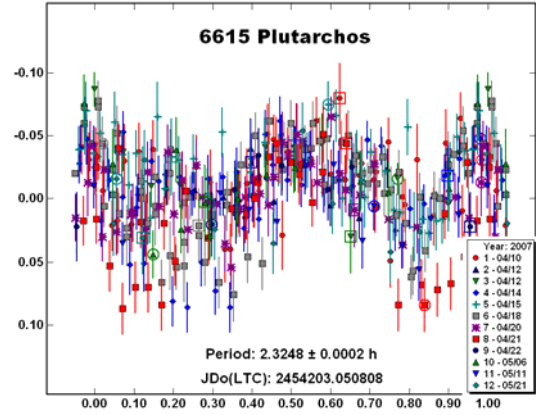


Fig. 1 Rotation period of the main body showing signs of primary or secondary events around phase 0.20.

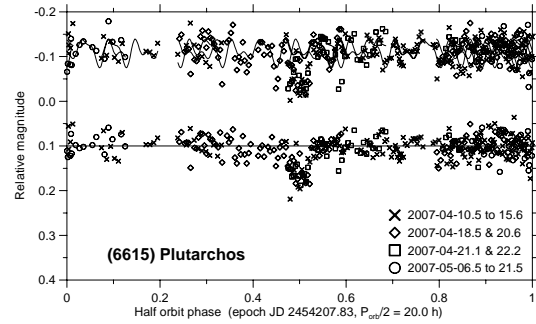


Fig. 2 The lightcurve illustrating the event captured during the campaign as shown in phase 0.50.

Date	Session	PA	LPAB	BPAB
10 th April 07	1	13.5	179.9	2.2
14 th April 07	4	15.7	180.4	2.2
18 th April 07	6	17.7	181.0	2.3
21 st April 07	8	19.2	181.4	2.3
21 st May 07	12	29.0	188.4	2.2

Table 1. Aspects of 6615 Plutarchos during the start, the 3 observed events and the end of campaign.

Acknowledgement

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References

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