

LIGHT CURVE ANALYSIS OF 8 ASTEROIDS FROM LEURA AND OTHER COLLABORATING OBSERVATORIES

Julian Oey
Leura Observatory
94 Rawson Pde. Leura Australia
julianoey1@optusnet.com.au

J. Világi, Š. Gajdoš, L. Kornoš, A. Galád
Modra Observatory
842 48 Bratislava, Slovakia

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The synodic periods for several asteroids were obtained during the second half of 2006. Those asteroids were 1301 Yvonne, 7.3200h; 1241 Dysona, 8.6080h; 2910 Yoshkar-Ola, 3.4233h, 3105 Stumpff, 5.0369h; 3258 Somnium, 5.3379h; 3850 Peltier, 2.4289h; (6263) 1980 PX, 3.464h; 3665 Fitzgerald, 2.4142h; 12696 Camus, 3.78h.

Kingsgrove Observatory is a new addition to Oey's observation platform. The observatory is equipped with a 10" Meade Schmidt Cassegrain Telescope operating with a focal reducer at f/5.2 The telescope is mounted on a fixed pier using a CG-11 Losmandy equatorial mount modified to accept the Gemini robotic controller. Recently a new SBIG ST-402ME was purchased to make the telescope fully functional for photometry work. The combined telescope and camera has a working resolution of 1.41"/pixel at 1x1 binning. When longer than a 2-minute exposures were required, a separate 120mm achromatic refractor guide scope and SBIG ST-4 camera were used for guiding. Kingsgrove Observatory will perform work mainly on targets in the Southern Hemisphere because surrounding buildings and vegetation prevent the telescope viewing more than 2-hours worth of Northern Hemisphere targets.

Leura Observatory's location and instrumentation has been documented previously in Oey (2006). Leura Observatory has joined the Photometry Survey of Asynchronous Binary Asteroid (PSABA) project directed by Petr Pravec. All except 1301 Yvonne, 1241 Dysona and 12696 Camus were selected from the list provided by the above project. Modra Observatory used a 0.6m, f/5.5 reflector with an AP8p CCD camera. Image dimensions were 25 arcminutes square (1.5 arcseconds per pixel). All images were taken through clear filter.

Image analysis was done using MPO Canopus, which employs differential aperture photometry and the Fourier period analysis algorithm developed by Harris (1989). All images were unfiltered. Dark frames and flat fields were used for image calibration. Other software used were TheSky 6 Pro and CCDSoft V5 from Software Bisque.

1301 Yvonne. This target was selected as a test subject for the new setup for Kingsgrove Observatory. The derived period of 7.3200 \pm 0.0001 h is in agreement with previous work by Pray (2004) with the exception that the amplitude was 0.60 \pm 0.03 mag compared with that obtained in this current apparition of 0.90 \pm 0.03 mag.

This can be explained by the phase angle difference of around 7° for Pray versus 22° for this work.

1241 Dysona. This target was selected from a list of target suggested in the CALL website (Warner 2006). Behrend (2002) previously reported a period of 8.856 h. However, correspondence with Behrend indicated that his data covered short segments of the curve and so there were a number of other possible solutions. The observations from Leura Observatory from April 21 to May 6, 2006, produced a unique period of 8.6080 \pm 0.0005 h.

2910 Yoshkar-Ola and 3850 Peltier. Both minor planets were recommended targets for observation as part of the PSABA project. There were no previous lightcurve parameters reported for either of these asteroids. The period for 2910 Yoshkar-Ola was found to be 3.4233 \pm 0.0001 h while that for 3850 Peltier was determined to be 2.4289 \pm 0.0001 h.

3105 Stumpff. The derived period is 5.0369 \pm 0.0001 h with an amplitude of 0.34 \pm 0.05 mag. No previous published parameters were found. Observations at Modra on Oct. 31 and Nov. 8 showed an unexpected brightening, near phase 0.8, that could not be explained by an intervening background star. Subsequent observations over five more sessions were not able to reproduce the above anomaly and so no reasonable explanation can be offered.

3258 Somnium. This asteroid was a target within the PSABA project and had no previously reported lightcurve parameters. Our data (five sessions by Leura and one session at Modra) revealed a synodic period of 5.3379 \pm 0.0002 h with an amplitude of 0.80 \pm 0.05 mag.

(6263) 1980 PX. This was another target in PSABA program. A significant attenuation was noted Oct. 10, indicating that this target might be binary. However, because the asteroid was fading rapidly, it was not possible to obtain sufficient observations to confirm this possibility. The data we did obtain indicates a period of 3.464 \pm 0.002 h and amplitude of 0.05 \pm 0.05 mag. The next favorable apparition is in 2009. At that time, the asteroid will be bright enough for most observers to try to confirm if the asteroid is indeed a binary.

12696 Camus. This asteroid was worked because it happened to be in the same field with 3258 Somnium. The derived period derived is 3.78 \pm 0.04 h.

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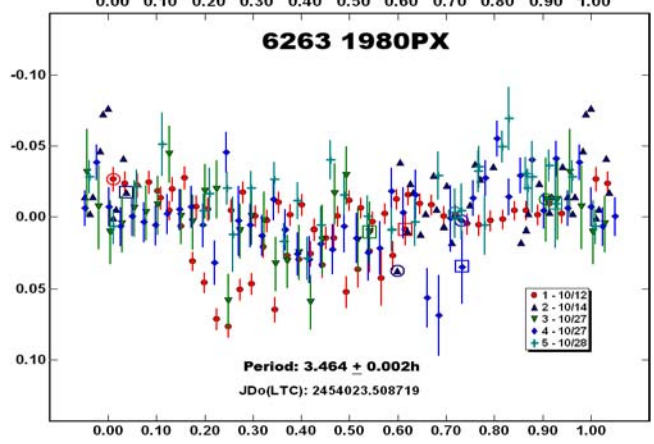
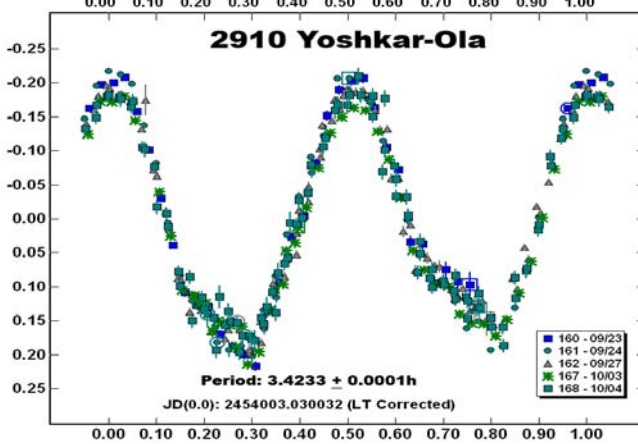
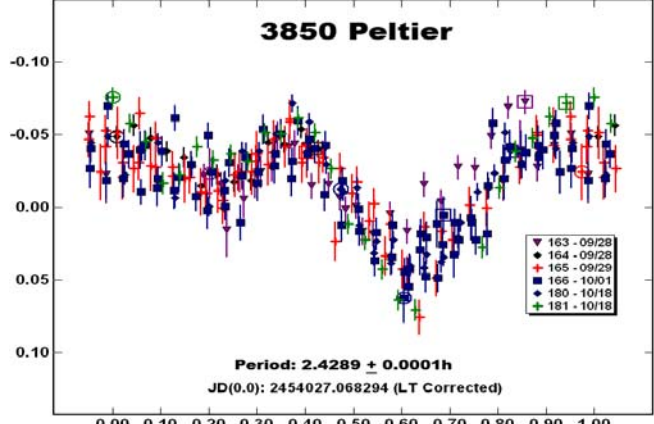
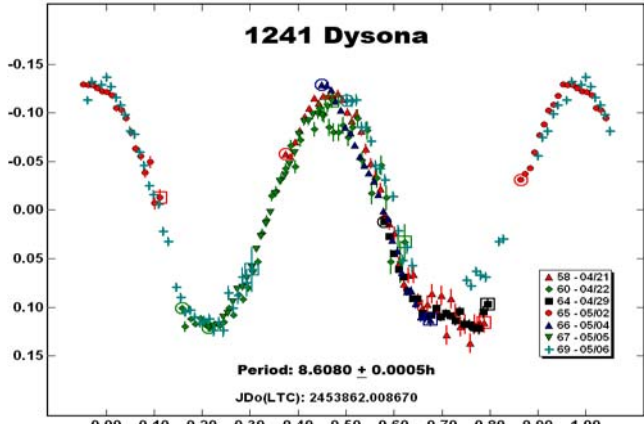
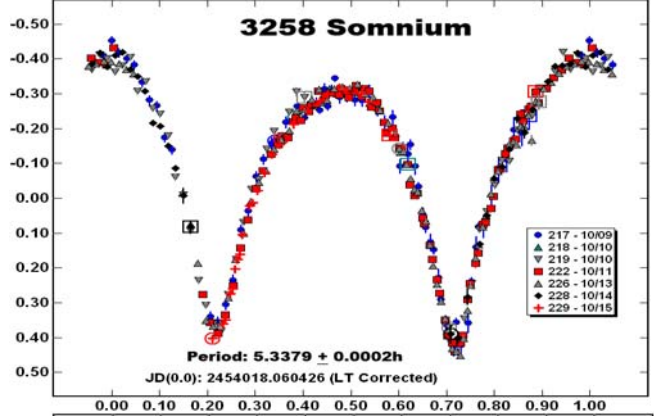
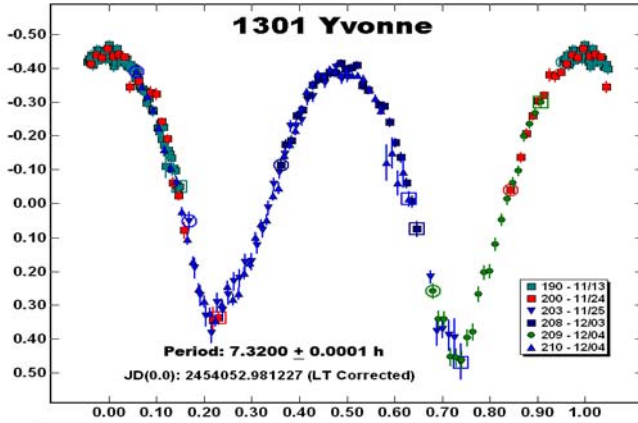
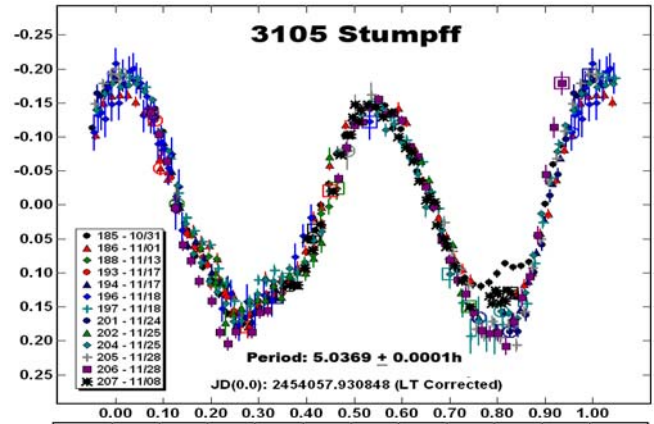
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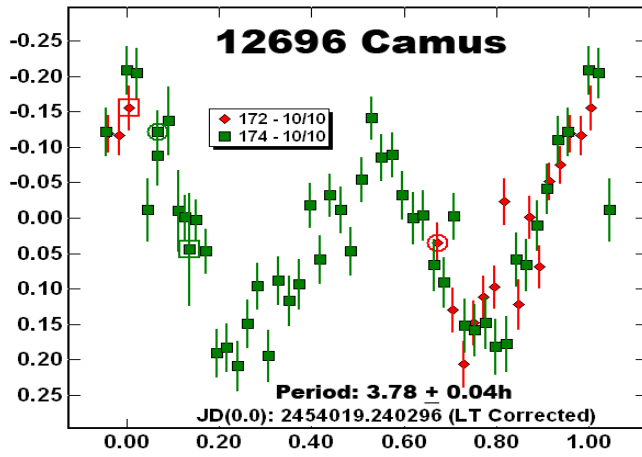
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#	Name	Date (mm/dd)	Points	Period (h)	Amp. (m)	PA	L/PAB	BPAB
2006								
1301	Yvonne	11/13 - 04/12	223	7.3200 ± 0.0001	0.90 ± 0.05	21.5,23.2	50.5,52.7	-42.9,-44.0
1241	Dysona	04/21 - 05/06	248	8.6080 ± 0.0005	0.24 ± 0.05	10.2,13.1	195.3,195.5	-24.1,-24.4
2910	Yoshkar-Ola	09/23 - 10/04	323	3.4233 ± 0.0001	0.36 ± 0.05	12.8,11.3	223.3,226.7	-21.3,-21.1
3105	Stumpff	10/31 - 11/28	471	5.0369 ± 0.0001	0.35 ± 0.02	6.8,14.3	41.5,43.4	-9.4,-9.1
3258	Somnium	10/09 - 10/15	356	5.3379 ± 0.0002	0.80 ± 0.05	4.5,4.7	17.1,17.7	-5.8,-5.3
3850	Peltier	09/28 - 10/18	260	2.4289 ± 0.0001	0.10 ± 0.05	8.0	13.6,15.0	-7.3,-7.6
6263	1980 PX	10/12 - 10/28	196	3.464 ± 0.002	0.05 ± 0.05	6.9,16.3	9.9,12.6	-2.0,-2.2
12696	Camus	10/10	61	3.78 ± 0.04	0.40 ± 0.05	3.0	17.3	-6.3