2010MPBu...37..145F

LIGHTCURVE DETERMINATION OF 2954 DELSEMME, 3305 CEADAMS, AND 7476 OGILSBIE

Andrea Ferrero
Bigmuskie Observatory (B88)
via Italo Aresca 12, 14047 Mombercelli–Asti, ITALY
bigmuskie@alice.it

(Received: 8 June)

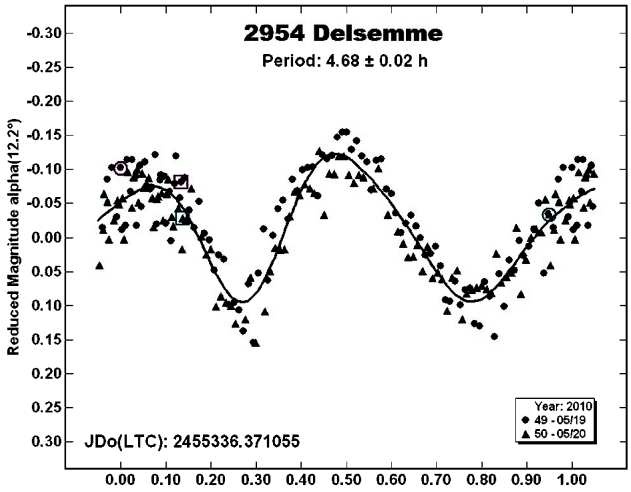
CCD photometric observations of three asteroids were obtained and analyzed at the Bigmuskie Observatory, Italy, in 2010 April and May: 2954 Delsemme; 3305 Ceadams; and 7476 Ogilsbie

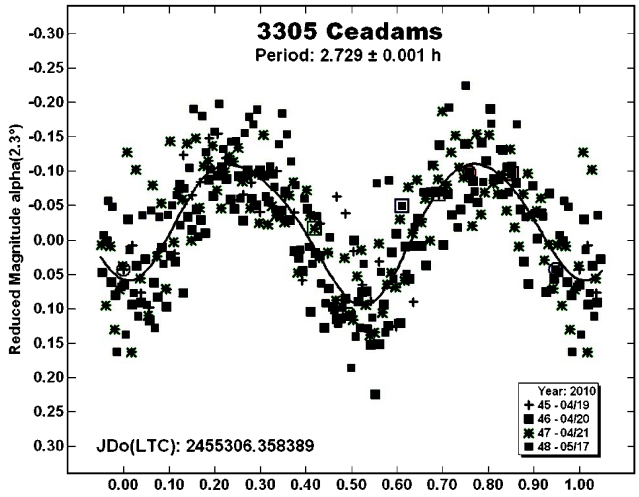
Starting in 2010 April, I added photometric studies of asteroids in addition to my ongoing work of measuring astrometric positions. My goal was to observe asteroids reaching a favorable sky location from my position to obtain the lightcurves and then determine rotation periods. Observations were made using a 0.3-m Ritchey-Chretien working at f/8 coupled to a Finger Lakes MaxCam CM-9 CCD camera. The camera was operated at –20°C. *MPO Canopus* (Warner 2010) was used to measure the unfiltered images using differential photometry as well as for period analysis of the data. The maximum duration for observing runs was about 7 hours, less if the asteroid had a negative declination.

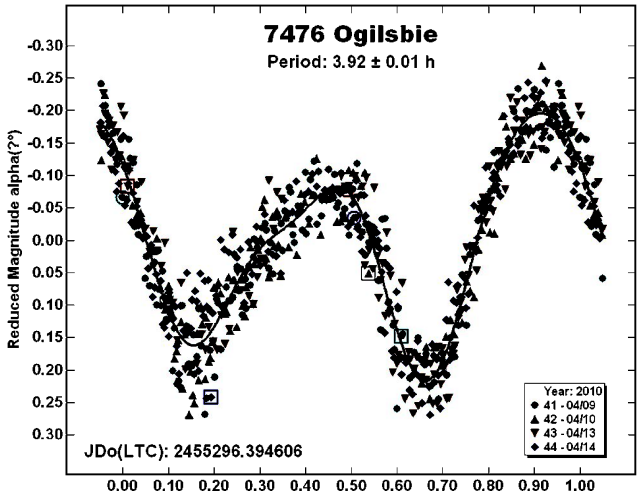
2954 Delsemme. The initial session on 2010 May 19 clearly showed a bimodal curve with a period $P \sim 4.7$ h, although the period spectrum did show other possible solutions. The second session on May 20 refined the period solution to 4.68 ± 0.02 h. This is in good agreement with Wisniewski et al. (1997), who found $P = 4.69$ h.

3305 Ceadams. Because this asteroid was faint (V > 15) it was a more difficult target for my system. I obtained additional sessions to make sure of the period solution. The initial solution was for a curve with four maxima and minima per cycle. The second session changed this to three pairs but the data had a very poor fit to the modeled curve. After three sessions followed by about three weeks of bad weather, a fourth session helped to reach the final bimodal lightcurve solution of $P = 2.729 \pm 0.001$ h.

7476 Ogilsbie. Using four sessions in 2010 April, I found a convincing solution with a period of $P = 3.92 \pm 0.01$ h. Analysis using less than the full data produced less secure results.







References

Warner, B.D. (2010). *MPO Canopus* software, v10.1.0.6. Bdw Publishing, Colorado Springs, CO.

Wisniewski, W.Z.; Michalowski, T.M.; Harris, A.W.; McMillan, R.S. (1997) "Photometric Observvations of 125 Asteroids." *Icarus* **126**, 395-449

© Minor Planets Section of the ALPO • Provided by the NASA Astrophysics Data System

2010MPBu...37..145F

ASTEROID LIGHTCURVE ANALYSIS AT THE VIA CAPOTE OBSERVATORY: 2010 FEBRUARY-MAY

James W. Brinsfield
Via Capote Observatory
5180 Via Capote, Thousand Oaks, CA 91320
jbrinsfi@viacapotesky.com

(Received: 6 June)

Photometric data for eight asteroids were obtained at the Via Capote Observatory from 2010 February through May. Synodic periods from the resulting lightcurves were found for: 1845 Helewalda (7.4 h); 2090 Mizuho (5.47 h); 2297 Daghestan (7.75 h); 2881 Meiden (3.48 h); 4569 Baerbel (2.737 h); 5691 Fredwatson (106.25 h); 11100 Lai (> 5 hrs); and (22295) 1989 SZ9 (3.80 h). Several of these targets had no previously published photometric lightcurve data.

CCD photometric observations were made of eight asteroids from 2010 February through May to determine the synodic rotation periods. Observations at the Via Capote Observatory in southern California were made using a Meade LX200 0.36-m Schmidt-Cassegrain (SCT) working at f/10. The CCD imager was an Apogee Alta U6 with a 1024x1024 array of 24-micron pixels. All observations were made unfiltered at 1x binning yielding an image scale of 1.44" per pixel. All images were dark, flat field, and bias corrected. Images were measured using *MPO Canopus* (Bdw Publishing) with a differential photometry technique. Comparison stars were chosen and linked using the "Comp Star Selection" tool embedded within the *Canopus* analysis package. The data were light-time corrected. Period analysis was also done with *Canopus*, which implements the Fourier analysis algorithm developed by Harris (Harris et al., 1989). Most target selections were made using the Collaborative Asteroid Lightcurve Link (CALL) web-site (Warner, 2010) and "Lightcurve Opportunities" articles from the *Minor Planet Bulletin*. Priority was given to asteroids that did not have a published rotation period.

The results are summarized in the table below. Individual lightcurve plots along with additional comments, as required, are also presented. The reference phase angle (α) listed on the plots is for the first session in the data set.

1845 Helewalda. The low declination of this target limited the number of usable sessions that could be obtained and so only partial coverage was achieved. The results of this study agree well with those of DeGraff (2001) and Carbo (2009). There was an interesting feature at phase 0.28 where the maxima exhibited a dip. This was also apparently observed by the Carbo group.

2297 Daghestan. Behrend (2010) reported a provisional period of 7.7 h with an amplitude of 0.37 mag. These compare to 7.75 h and 0.24 mag found in this study.

2881 Meiden. Toward the end of this campaign, the object faded to near the practical magnitude limit for the system and so the resultant data on these later sessions became rather noisy.

11100 Lai. Coincidently, this object was in the field of view for the April 8 observing session for 2297 Daghestan and was at or near a very favorable opposition. Despite the favorable apparition, the target was near the practical magnitude limit for the system and the study was abandoned after two additional dedicated sessions were completed. The April 16 session suggests the period to be something greater than 5 hours.

References

Behrend, R. (2010). Observatoire de Geneve web site: http://obswww.unige.ch/~behrend/page_cou.html

Carbo, L., Green, D., Kragh, K., Krotz, J., Meiers, A., Patino, B., Pligge, Z., Shaffer, N., and Ditteon, R. (2009). *Minor Planet Bul.* **36**, 152-157.

DeGraff, D.R. and Kern, J.S. (2001) *Bul. Amer. Astron. Soc.* **33**, 1403.

Harris, A.W., Young, J.W., Bowell, E., Martin, L.J., Millis, R.L., Poutanen, M., Scaltriti, F., Zappala, V., Schober, H.J., Debehogne, H., and Zeigler, K.W. (1989). "Photoelectric Observations of Asteroids 3, 24, 60, 261, and 863." *Icarus* **77**, 171-186.

Warner, B.D. (2010) CALL web site. http://www.MinorPlanetObserver.com/astlc/default.htm

# Name	Date Range (mm/dd) 2010	Data Points	Phase	L_{PAB}	B_{PAB}	Per(h)	PE	Amp (mag)	AE
1845 Helewalda	02/16-02/18	167	2.1,1.3	152	+2	7.4	0.1	0.28	0.04
2090 Mizuho	02/17-02/18	129	1.2	152	+2	5.47	0.01	0.30	0.05
2297 Daghestan	04/08-04/24	269	1.0,0.7,5.9	200	+2	7.75	0.01	0.24	0.05
2881 Meiden	02/11-04/27	323	7.6,31.1	141	-3	3.48	0.01	0.18	0.08
4569 Baerbel	04/25-05/01	192	6.4,9.2	202	+0	2.737	0.001	0.24	0.05
5691 Fredwatson	04/09-05/15	714	15.1,27.1	176	+7	106.25	0.02	>1.2	
11100 Lai	04/08-04/16	185	1.4,1.0,4.0	200	+2	> 5	0.5	>0.15	
(22295) 1989 SZ9	04/02-04/07	385	6.3,9.3	182	-1	3.80	0.01	0.04	0.02

Table I. Observation circumstances. The phase column gives the phase angle at the beginning and end of the data set. When three numbers are given, the middle value is the minimum phase angle observed. The two PAB columns give the approximate longitude and latitude of the phase angle bisector.

© Minor Planets Section of the ALPO • Provided by the NASA Astrophysics Data System