

LIGHTCURVE ANALYSIS OF 1102 PEPITA

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Observations of 1102 Pepita were made in June 2007. Analysis yields a lightcurve with a period of 5.1054 ± 0.0002 hr and amplitude of 0.34 ± 0.03 mag.

The authors independently selected 1102 Pepita from the list of asteroid photometry opportunities published by Brian Warner and Alan Harris on the Collaborative Asteroid Lightcurve Link (CALL) website (Harris 2007). Stephens observed on June 9, 10 and 17 using a 0.35m SCT/RX with SBIG ST9e CCD camera operating at -5 to -10 C. Sada observed on June 12 and 17 using a 0.35m SCT and ST9e CCD camera operating at -8 to -10 C. Both instruments were operating at F/6.3 providing a resolution of 1.7 arcseconds per pixel. All images were unfiltered. The table gives the viewing aspects. Note that the asteroid reached a minimum phase angle (α) of $\sim 6.1^\circ$ on June 14, 2007.

Date	Phase	PAB _L	PAB _B
2007 June 09	6.4	263.7	14.4
2007 June 10	6.3	263.7	14.4
2007 June 12	6.2	263.7	14.5
2007 June 17	6.2	263.7	14.8

Each author measured his images using MPO Canopus, which employs differential aperture photometry to produce the raw data. Period analysis by Warner was done using Canopus, which incorporates the Fourier analysis algorithm (FALC) developed by Harris (1989). The resulting lightcurve reveals a period of 5.1054 ± 0.0002 hr and an amplitude of 0.34 ± 0.03 mag.

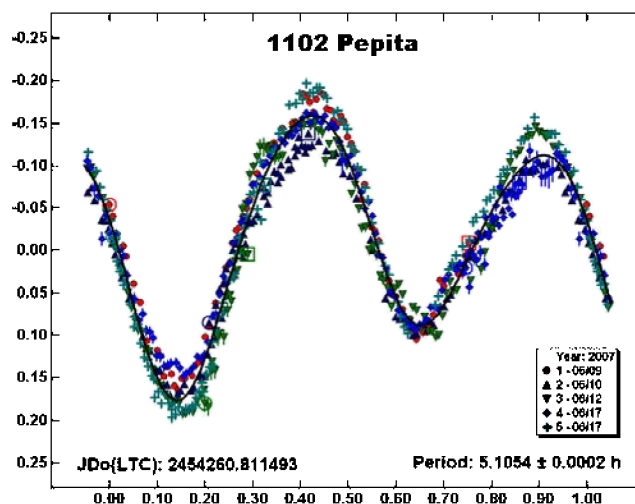
Acknowledgements

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LIGHTCURVE OF MINOR PLANET 2167 ERIN

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Lightcurve measurements of 2167 Erin were performed March – April 2007. Data analysis produced a lightcurve with a synodic period of 6.493 ± 0.001 hrs and an amplitude of 0.6 mag.

Our observations of 2167 Erin represent the first attempt of photometry observations from Osservatorio Astronomico Margherita Hack, Firenze (MPC code A57). The target was selected from the list of asteroid photometry opportunities published by Warner et al. (2007). This list show a period of 7.0 hrs with uncertainty parameter (U) of 2 for 2617 Erin.

The observations for this paper were obtained with a SC Meade 0.25m LX200 Classic + Focal reducer f/6.3 and Optec TCF-S electronic focuser. The CCD camera was SBIG ST7 XME. Exposure times varied between 120 – 240 s. All the observations were performed on 9 nights between 09 March and 16 April 2007.

Analysis of the combined data sets was made using the MPO Canopus software. The derived synodic rotation period was 6.493 ± 0.001 hrs. This result is comparable to the value published in the list by Harris (2006). During some of 30 images of the 9th session on 16 April 2007, the asteroid was passing near a bright star. For this reason the photometric measurements of these images were made using a different diameter of the circular apertures and plotted as the 10th session. In any case the derived synodic rotation period was unchanged from the 10th session.

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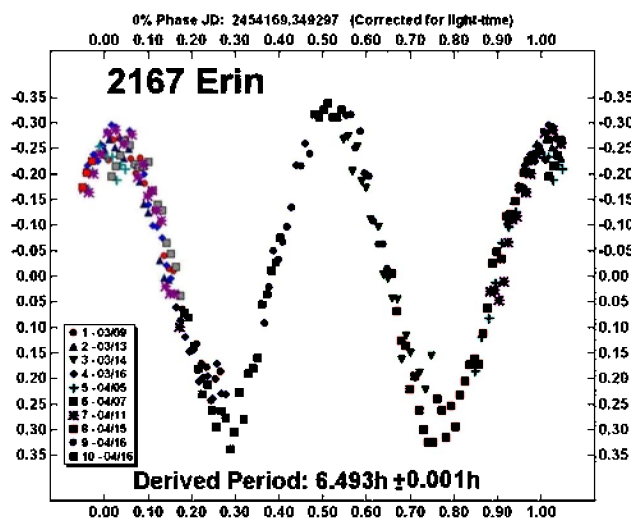


Figure 1: Composite lightcurve of asteroid 2167 Erin derived from 9 nights of observations and a rotation period of 6.493 hours.

LIGHTCURVE OF 7304 NAMIKI

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7304 Namiki was observed on 7 nights in May 2007. The synodic period was determined to be 8.8712 ± 0.0014 hr. The lightcurve amplitude was 0.74 ± 0.02 magnitudes, peak to peak.

Asteroid 7304 Namiki was observed at Teakdale Astrophysical Observatory (MPC Code H90) in suburban Ottawa during an unusual string of clear weather on seven nights in May 2007. This target was chosen as one of the most northerly asteroids on the MPB list of photometry opportunities (Warner et al. 2007).

On the first five nights, data were collected with a 9cm f/5.6 apochromatic refractor on a German equatorial mount with an SBIG ST2000XM CCD camera and Custom Scientific clear filter. Image scale was 3.07 arc-seconds per pixel. Photometric data from

these 5 nights were too noisy to clearly discern whether the curve was monomodal or bimodal, so an additional two nights of data were collected using a recently repaired 200mm f/5.6 Newtonian with the same camera and filter at an image scale of 1.36 arc-seconds per pixel. Typical sessions were approximately 5.5 hours in duration, interrupted by a meridian flip near local midnight. Two nights were cut short by cloudy skies. Exposures throughout were 120 sec. All exposures were auto-guided. Camera temperature was maintained at -10C for all exposures. Maxim DL/CCD Version 4.59 was used for telescope and camera control, for image calibration (bias, dark, and flat-field), and for differential photometry using three comparison stars for each data series. Observations were light-time corrected based on distances indicated by the Earth Centred Universe Version 5.0 Pro planetarium program. In all, 499 observations were collected.

Data were analyzed using Period04 Version 1.0.1 (Lenz and Breger, 2005). A frequency of 5.41074 ± 0.0008 d⁻¹ was found by Period04. By examination of the folded light curve, this was determined to be one half of the bimodal period of 8.8712 ± 0.0014 hr. Period04 found an amplitude of 0.74 ± 0.02 magnitudes. The period agrees well with previous results of 8.90 ± 0.02 hr (Brinsfield 2007), 8.8586 ± 0.0006 hr (Montigiana 2007), and 8.8754 ± 0.0001 hr (Sheridan 2007).

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