

THE ROTATIONAL PERIOD OF 328 GUDRUN

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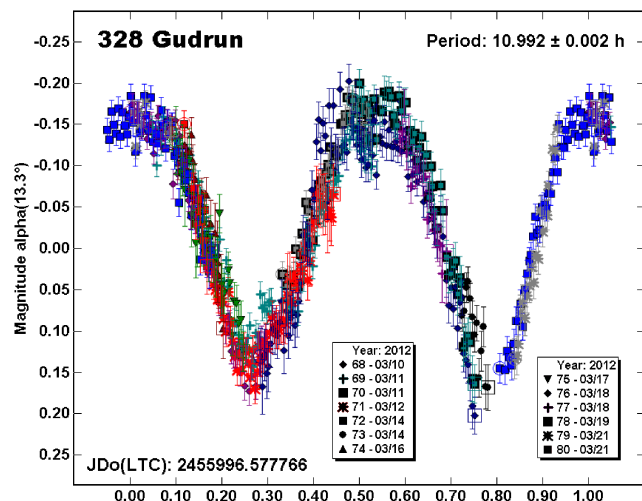
(Received: 21 March)

Lightcurve analysis of CCD observations for minor planet 328 Gudrun in 2012 March indicates $P = 10.992 \pm 0.002$ h with $A = 0.32 \pm 0.03$ mag in Cousins I band.

Max Wolf discovered 328 Gudrun on 1892 March 18 (Schmadel 2003). Photographic photometry by Lagerkvist (1978) suggested a period > 12 h and amplitude in B magnitude < 0.15 . Behrend (2004, 2010) attempted to fit observations with limited coverage of the full lightcurve obtained by Bernasconi and Audejean to a period of 17.96 h.

In 2012 March, differential photometry of 328 Gudrun was conducted at Burleith Observatory using a PlaneWave 12.5-inch $f/8$ CDK, Astro-Physics AP900 mount, and self-guiding SBIG STL-1001E CCD at -5°C . Image scale was 1.95 arc-seconds per 24-micron pixel, unbinned. Each exposure was 180 s using an *Astrodon* Cousins I-band filter (bandwidth 700-900 nm). Urban light in Washington, DC limits observing to the near-IR. Observations were bias and sky flat-field corrected using *CCDSof* version 5.00.195. Photometry and period analysis was performed using *MPO Canopus* version 10.4.0.20 (Warner, 2011).

From 621 images over nine nights, analysis found the rotation period to be $P = 10.992 \pm 0.002$ h with Cousins I band $A = 0.32 \pm 0.03$.



Acknowledgements

The author thanks James A. DeYoung for his independent period analysis and helpful suggestions.

References

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ASTEROID LIGHTCURVE ANALYSIS AT THE ETSCORN CAMPUS OBSERVATORY FOR JANUARY AND FEBRUARY 2012

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(Received: 27 February Revised: 16 April)

Three asteroids were observed at the Etsorn Campus Observatory during the first two months of 2012. Synodic periods ranging from 3 hours to 32 hours were obtained. The asteroids are: 2026 Cottrell, 3397 Leyla, and 4801 Ohre.

Photometric observations of three asteroids were made at the Etsorn Campus Observatory on the campus of New Mexico Institute of Mining and Technology. The observatory, which is used for research, teaching and public events, has two 0.35-m Celestron Schmidt-Cassegrain telescopes with SBIG STL-1001E CCD camera systems that were used to make the observations.

Depending on the brightness of the asteroid, image exposures were either 3, 5, or 6 minutes through a clear filter. 1x1 binning was used giving 1.25 arc seconds/pixel with a field of view of ~ 21.33 arc minutes. Telescope tracking and image collection were done with Software Bisque's (2011) *TheSky* v6 and *CCDSof*. Flats were obtained using light reflected off the wall and dome of the enclosures. All images were dark subtracted, flat-field corrected, and aligned using *IDL* (Visual Information Solutions, 2012) procedures developed by the author. The lightcurve analysis was done using *MPO Canopus*, version 10.4.0.6 (Warner, 2011) which incorporates the Fourier analysis algorithm (FALC) developed by Harris (Harris *et al.*, 1989). Final synodic periods were obtained using 8 orders in the Fourier series period determination.

The results are summarized in Table 1 below. The table columns are: asteroid number, asteroid name, date range of observations, number of nights observed, number of data points used, solar phase angle, synodic period, period error, amplitude and amplitude error. For the solar phase angle column, the first number is associated with the first night's observations and the last number is associated with the last night's observations. If there are three numbers, the middle one is the minimum solar phase angle. The phased plots are also shown below.

2026 Cottrell (1955 FF). This asteroid was discovered 1955 March 30 at Brooklyn, Indiana, by the Indiana Asteroid Program, Goethe Link Observatory, University of Indiana. (JPL Small-Body Database Browser). This program was conceived and directed by