LIGHTCURVE ANALYSIS OF FOUR ASTEROIDS

Bin Li
Haibin Zhao
Xianming Han
Butler University, xhan@butler.edu
Lina R. Annable
Eli M. Finkel

See next page for additional authors

Follow this and additional works at: https://digitalcommons.butler.edu/facsch_papers

Part of the Astrophysics and Astronomy Commons

Recommended Citation
Li, Bin; Zhao, Haibin; Han, Xianming; Annable, Lina R.; Finkel, Eli M.; Heffner, Orry R.; Kidd, Adam W.; Magnetta, Bradley J.; Ramires, Tiffany M.; Rastede, Frederick W.; and Sproston, Sean G., "LIGHTCURVE ANALYSIS OF FOUR ASTEROIDS" Minor Planet Bulletin / (2013): 62-63. Available at https://digitalcommons.butler.edu/facsch_papers/742

This Article is brought to you for free and open access by the College of Liberal Arts & Sciences at Digital Commons @ Butler University. It has been accepted for inclusion in Scholarship and Professional Work - LAS by an authorized administrator of Digital Commons @ Butler University. For more information, please contact digitalscholarship@butler.edu.
Authors
Bin Li, Haibin Zhao, Xianming Han, Lina R. Annable, Eli M. Finkel, Orry R. Heffner, Adam W. Kidd, Bradley J. Magnetta, Tiffany M. Ramires, Frederick W. Rastede, and Sean G. Sproston
LIGHTCURVE AND ROTATIONAL PERIOD DETERMINATION FOR 5275 ZDISLAVA

Janek Nathaniel Turk
Etscorn Campus Observatory
New Mexico Institute of Mining and Technology
101 East Road
Socorro, NM 87801 USA
jturk@nmt.edu

(Received: 21 November)

Observations of the minor planet 5275 Zdislava were made between 2012 August 17 and October 29. Analysis of the lightcurve determined that the asteroid has a synodic period of 5.200 ± 0.002 h and lightcurve amplitude of 0.54 ± 0.03 mag.

Named after Czech saint Zdislava Berka, 5275 Zdislava is a Mars-crossing asteroid. This minor planet was discovered on 1986 October 28 by Z. Vavrova at the Kelt Observatory (JPL, 2012). Observations of 5275 were made at Etscorn Campus Observatory on the campus of New Mexico Institute of Mining and Technology. The images were taken through a clear filter with a 0.35-m f/11 Schmidt Cassegrain mounted on a Paramount ME and SBIG STL-1001E CCD camera. Exposures were 180 seconds. The image size was 1024x1024 24-micron pixels, providing a scale of 1.25 arcsec per pixel. The CCD was cooled to either –20º C or –25º C, depending on the night-time temperature. Once the images were taken, they were flat-corrected, dark-subtracted, and aligned with CCDSoft 5 (Software Bisque, 2012). MPO Canopus (Warner, 2012) was used to generate the lightcurve and rotational period of the minor planet.

The period determined by MPO Canopus was 5.200 ± 0.002 h. Data from the nights of the Sep 20 and Oct 17 had to be split due to weather and focus issues.

Acknowledgements

Special thanks go to Dr. Daniel A. Klinglesmith III for his guidance and help in processing and collecting the data. I would also like to acknowledge my fellow team members: Angelica Vargas, Ethan Risley, and Curtis Warren for the number of nights we’ve spent at the observatory. I would like to give thanks to Dr. Frank T. Etscorn for providing the Etscorn Observatory. The Research and Economic Development Office of New Mexico Institute of Mining and Technology deserves recognition for the up-keep of the Etscorn Campus Observatory. Lastly, the NASA EPSCOR for grant NNX11AQ35A that allows the students in our team to participate in this research.

References

JPL Small Bodies Database Browser (2012). http://ssd.jpl.nasa.gov/sbdb.cgi#top
27.807 h), Owings (2012, 27.8128 h), Clark (2012, 27.8124 h), and Ferrero (2012, 27.80 h). We obtained our data from 5 different sessions from 2011 June 26 to Nov 17 and found the period to be $P = 27.82 \pm 0.01$ h and amplitude $A = 0.55 \pm 0.05$ mag. Our results agree with these previously reported periods and amplitudes.

11941 Archinal. Data were collected on the nights of 2012 Apr 27, May 16, 17, and 22. A synodic period of $2.717 \pm 0.006$ h and amplitude of $0.30 \pm 0.01$ mag were obtained. (47035) 1998WS. Data were collected on the nights of 2012 Jan 30, Feb 13 and 21. A synodic period of $P = 7.996 \pm 0.001$ h and amplitude of $0.12 \pm 0.01$ mag were obtained.

Acknowledgements

We would like to thank F. Levinson for a generous gift enabling Butler University's membership in the SARA consortium. We would also like to thank the support by the National Natural Science Foundation of China (Grant Nos. 11178025 and 10933004), and the Minor Planet Foundation of Purple Mountain Observatory.

References


