

V-BAND PHOTOMETRIC MONITORING OF 852 WLADILENA

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V-band photometry of main-belt asteroid 852 Wladilena was obtained on a single night in February 2017. From the light curve, we determined a rotational period of 4.717 ± 0.023 hours and an amplitude variability of 0.26 ± 0.03 mag.

852 Wladilena (alternatively known as 1916 S2J, A913 SB, and A924 WJ), named after Soviet revolutionary Vladimir Lenin, was first discovered by Soviet-Russian astronomer Sergey Beljavskij at Simeis Observatory on 2 April 1916 (JPL 2018). It has been previously studied by several groups, but most have not utilized filtered photometry.

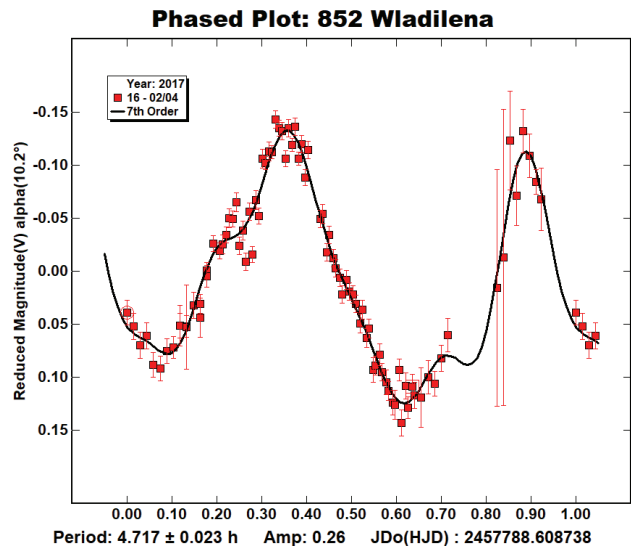
V-band photometric measurements of the asteroid were made at Hard Labor Creek Observatory in Rutledge, GA. This facility is owned and maintained by Georgia State University and was used to conduct observations for the semester-long project of ASTR 4100 and ASTR 6100: Observational Methods and Instrumentation. We used the 24-inch Miller telescope, which is a f/6.8 Corrected Dall-Kirkham Astrograph. The CCD camera used was an Apogee Alta which features a 15-micron pixel size distributed in a 2048 x 2048 array, providing a $26.3'' \times 26.3''$ field of view and a scale of 0.77 arcsec/pixel.

The observing conditions were non-photometric throughout the night. At times, the partly cloudy skies caused gaps in the observations. Eighty-nine exposures, each 240 seconds long, were taken over the course of the night. In total, the observations covered a total duration of 10 hours.

The images were reduced in IRAF using standard procedures. The reduced images were then processed using the aperture photometry function of IRAF (phot). A 10-pixel radius, approximately 7.7 arcseconds, was adopted to minimize uncertainties from variable seeing. Differential photometry between the asteroid and five field stars was used to correct the instrumental magnitudes of the asteroid. To convert from instrumental to calibrated magnitudes, we searched the APASS database for V-band magnitudes of stars in the field. We then determined the least-squared offset between the instrumental and calibrated magnitudes and calculated the final light curve for the asteroid.

MPO Canopus was used to implement the Fourier analysis as described by Harris *et al.* (1989) to examine the final light curve for the most likely rotational period. A 7th order polynomial was used in the final analysis. The plot below shows the V-band light

curve with the best fit overlaid, which is found to have a period of 4.717 ± 0.023 hours and an amplitude of 0.26 ± 0.03 mag.



852 Wladilena has been studied by several groups over the last three decades. The following rotation periods have been reported in the literature: 4.611 hours (Di Martino and Cacciatori, 1984), 4.612 ± 0.001 hours (De Angelis and Mottola, 1995), 4.6134 ± 0.0003 hours (Harris *et al.*, 1999), 4.612 hours (Kiss *et al.*, 1999), 4.608 ± 0.002 hours (Polishook, 2012), and 4.613 ± 0.001 hours (Klinglesmith *et al.*, 2013), 4.613301 ± 0.000002 hours (Hanuš *et al.*, 2013), 4.610 ± 0.002 hours (Warner, 2014), 4.61330 ± 0.00002 hours (Hanuš *et al.*, 2018) respectively. To our knowledge, only Di Martino and Cacciatori (1984) report V-band measurements while Harris *et al.* (2013) published infrared photometry measurements using WISE, and the remaining studies largely focused on unfiltered measurements. While Di Martino and Cacciatori (1984) published V-band measurements of 852 Wladilena, this work represents a sizeable increase in the number of data points collected (89 vs. 30). Our best-fit period is slightly longer than previous measurements, but this is likely due to the gaps in time coverage caused by clouds during our observations.

Many of these previous studies also reported amplitudes of variability: 0.30 mag (Di Martino and Cacciatori, 1984), 0.30 mag (De Angelis and Mottola, 1995), 0.25 ± 0.01 mag (Harris *et al.*, 1999), 0.32 mag (Kiss *et al.*, 1999), 0.28 ± 0.01 mag (Polishook, 2012), 0.29 ± 0.05 mag (Klinglesmith *et al.*, 2013), and 0.25 ± 0.02 mag (Warner, 2014). Our calculated amplitude, 0.26 ± 0.03 mag is somewhat smaller than most of these values, but could be due to the fact that our observations were filtered, rather than unfiltered, and may also be due to the larger uncertainties in our measurements of the second peak in the light curve.

Acknowledgements

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Number	Name	2017 mm/dd	Pts	Phase	L _{PAB}	B _{PAB}	Period(h)	P.E.	Amp	A.E.	Grp
852	Wladilena	02/04	89	10.15	144.4	25.8	4.717	0.023	0.26	0.03	PHO

Table I. Observing circumstances and results. Pts is the number of data points. The phase angle is given for the first and last date. L_{PAB} and B_{PAB} are the approximate phase angle bisector longitude and latitude at mid-date range (see Harris *et al.*, 1984). Grp is the asteroid family/group (Warner *et al.*, 2009).

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STAFF POSITION OPENING - ASSOCIATE PRODUCER, MINOR PLANET BULLETIN

The *Minor Planet Bulletin* announces the opening a new staff position of Associate Producer, with the probability of taking over the *MPB* Producer's position in about two years following a period of mentoring and collaboration. The responsibilities will be to assist the current Producer, Bob Werner, with the layout construction of each quarterly issue of the *Minor Planet Bulletin*, demonstrating proficiency for transitioning to the Producer position. For each *MPB* issue produced, the required tasks and capabilities to be demonstrated include:

- Reformatting approximately 30–40 manuscript documents from the editors.
- Responsive communication with the editorial and distribution staff.
- Able to commit to and adhere to deadlines throughout the calendar year.
- Corresponding with authors via email with article proofs.
- Handling formatting inquiries from new and seasoned authors who contribute manuscripts to the *MPB*.
- Laying out an issue's articles in a single master document, resulting in the ready-to-print and ready-to-release electronic version of each *MPB* issue.
- Constructing a full index of each annual volume.
- Maintaining a long-term electronic archive of all issues.

The skills required for the position of Associate Producer, *Minor Planet Bulletin* include:

- Proficiency with Microsoft Word 2013/2010, Portable Document Format (pdf) computer documents, and email. Production status is tracked using Excel.
- Knowledgeable expertise with asteroid astronomy sufficient for some error checking and recommending editorial corrections.
- Strong skills with written English.

The time commitment required varies from issue to issue, but typically occupies 25 or 30 hours each quarter. The *Minor Planet Bulletin* publishes four issues per year. All *MPB* staff positions, including this announced opening for Associate Producer, are volunteer positions without pay or other compensation. Materials and postage costs, as necessary, are reimbursed.

Persons wishing to be considered for the Associate Producer position should send a statement of interest, a statement on the level of available commitment, and a summary of qualifications to the Editor: rpb@mit.edu Review of applications will begin February 1, 2019. The position will remain open until filled.