

LIGHTCURVE ANALYSIS AND ROTATION PERIOD DETERMINATION OF ASTEROID 1466 MUNDLERIA

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Photometric observations of asteroid 1466 Mundleria ($e = 0.15$, $i = 13.15^\circ$, $H = 12.23$) were conducted using telescopes located in New Mexico, Italy, and Malta between 2022 Mar 24 and Apr 25. An analysis of these data yielded a rotation period of 89.280 ± 0.065 h.

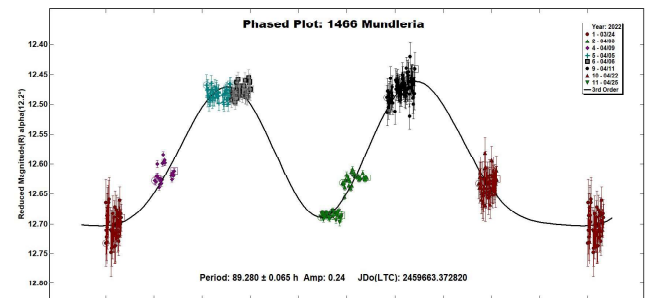
1466 Mundleria (1938 KA) was discovered by Karl Reinmuth at the Heidelberg Observatory in 1938 and named in honor German astronomer Max Mundler. It orbits the inner part of the main belt with a semi-major axis of 2.38 AU. 1466 Mundleria has an absolute magnitude of 12.23, a diameter of 22.13 km, an eccentricity of 0.15, and an inclination of 13.15° (JPL, 2022).

The University of Maryland authors observed the asteroid with the T21 telescope located in Mayhill, New Mexico, using a 0.43-m reflector with an $f/4.5$ focal reducer and an FLI-PL6303E CCD camera. A luminance filter was used along with an exposure time of 300 seconds and binning of 1. Marchini at the University of Siena used a 0.30-m $f/5.6$ Maksutov-Cassegrain telescope, SBIG STL-6303E NABG CCD camera, and a Clear filter. The pixel scale was 2.30 arcsec when binned 2×2 pixels and all exposures were 300 seconds. Mifsud at the Manikata Observatory used an 8-in Meade LX90 telescope with a SBIG ST10xme CCD camera. Galdies at the Znith Observatory used a 203-mm SCT telescope with a G2-1600 CCD camera binned at 1×1 pixels.

MPO Canopus (Warner, 2018) was used to perform aperture and differential photometry. A series of phased lightcurves were constructed using telescope observations between the nights of 2022 Mar 24 and Apr 25. The observing schedule along with results from the lightcurve analysis are summarized in Table I.

Period analysis shows a rotation period of 89.280 ± 0.065 h with an amplitude of 0.24 ± 0.04 mag. We could not find any previous rotation periods reported for 1466 Mundleria in the Asteroid Lightcurve Database (LCDB; Warner et al., 2009).

The phased lightcurve shows a bimodal distribution typical for asteroids. The determined rotation period, however, is larger than for most asteroids, and further observations are needed for refinement.



Acknowledgments

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References

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Number	Name	yyyy mm/dd	Phase	L _{PAB}	B _{PAB}	Period(h)	P.E.	Amp	A.E.	Grp
1466	Mundleria	2022 3/24-4/25	8.9	200.5	13.7	89.280	0.065	0.24	0.04	MB-I

Table I. Observing circumstances and results. The phase angle is given for the first and last date. If preceded by an asterisk, the phase angle reached an extrema during the period. L_{PAB} and B_{PAB} are the approximate phase angle bisector longitude/latitude at mid-date range (see Harris et al., 1984). Grp is the asteroid family/group (Warner et al., 2009).