

THE MINOR PLANET BULLETIN

BULLETIN OF THE MINOR PLANETS SECTION OF THE
ASSOCIATION OF LUNAR AND PLANETARY OBSERVERS

VOLUME 48, NUMBER 2, A.D. 2021 APRIL-JUNE

99.

ROTATION PERIOD DETERMINATION FOR ASTEROID 665 SABINE

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(Received: 2020 Dec 7)

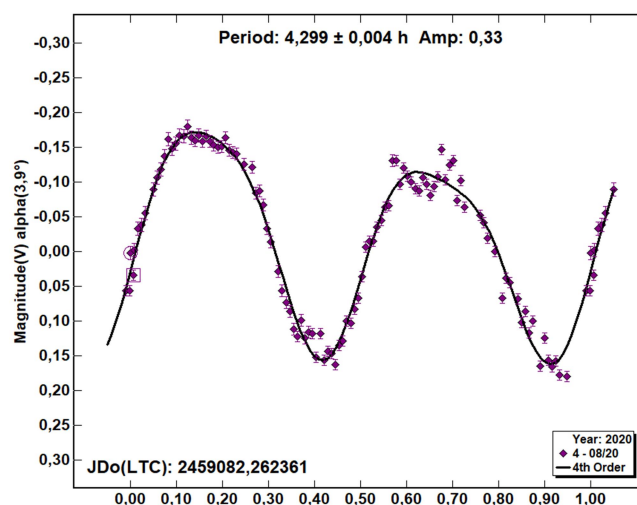
Photometric observations of the main-belt asteroid 665 Sabine were conducted from the NOAK Observatory, in Greece in order to determine its synodic rotation period. The results are: $P = 4.299 \pm 0.004$ h, $A = 0.33$ mag.

All observations were performed at the NOAK Observatory, Ioannina Greece (MPC-International Astronomical Union code L02), using a 0.25-m Newtonian Skywatcher optical tube operating at f/4.7. The optical tube is mounted on NEQ6 Skywatcher robotic mount and equipped with ATIK 460exm CCD camera. It is a high Quantum Efficiency CCD. No filters used so as to optimize the signal-to-noise. Exposure time for all the images was 2 minutes. The camera was binned at 1×1 . The image scale after 1×1 binning was 0.78 arcsec/pixel and the field of view 35.77×28.61 arcmin. In these fields, the asteroid and five comparison stars were measured for differential photometry.

All images were reduced in the standard manner using nightly flatfield files as well as dark-current and bias images. Photometric measurements and lightcurve analysis were performed using *MPO Canopus* (version 10.8.1.1; Warner, 2019). The Cartes Du Ciel was used as the planetarium software with the most recent ephemerides downloaded from the Minor Planet Center (2020) and Artemis Capture was used for image capture.

665 Sabine (A908 OE) was discovered by German astronomer Wilhelm Lorenz on July 22, 1908 at Heidelberg. It is an outer main-belt asteroid with a semi-major axis of 3.144 AU, eccentricity 0.172, inclination 14.753° , and an orbital period of 5.58 years. Its absolute magnitude is $H = 8.7$ (JPL, 2020). The period analysis shows a solution for the rotational period of

$P = 4.299 \pm 0.004$ h with an amplitude $A = 0.33 \pm 0.03$ mag, which is close to previously published results in the asteroid lightcurve database of 4.294 h (LCDB; Warner et al., 2009).



References

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Number	Name	yyyy mm/dd	Phase	L _{PAB}	B _{PAB}	Period(h)	P.E.	Amp	A.E.	Grp
665	Sabine	2020 08/20	3.8	326	9	4.299	0.004	0.33	0.02	MB-O

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).