

ROTATION PERIOD DETERMINATION FOR ASTEROID 3616 GLAZUNOV

Alessandro Marchini, Riccardo Papini
Astronomical Observatory, DSFTA - University of Siena (K54)
Via Roma 56, 53100 - Siena, ITALY
marchini@unisi.it

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Photometric observations of the main-belt asteroid 3616 Glazunov were conducted in order to determine its synodic rotation period. We found $P = 18.932 \pm 0.004$ h, $A = 0.14 \pm 0.03$ mag.

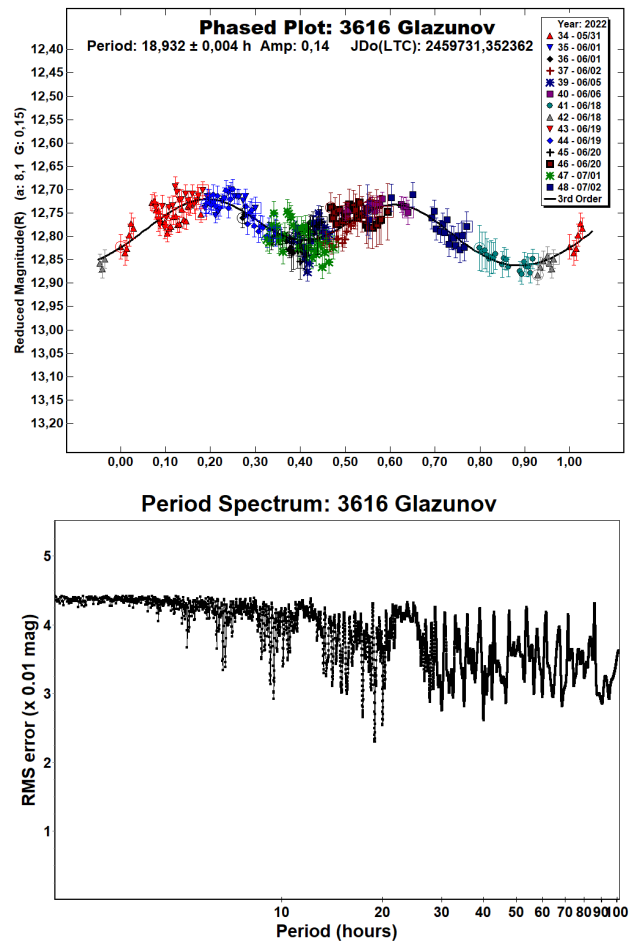
CCD photometric observations of the main-belt asteroid 3616 Glazunov were carried out in 2022 May-July at the Astronomical Observatory of the University of Siena (K54), a facility inside the Department of Physical Sciences, Earth and Environment (DSFTA, 2022). We used a 0.30-m $f/5.6$ Maksutov-Cassegrain telescope, SBIG STL-6303E NABG CCD camera, and clear filter; the pixel scale was 2.30 arcsec when binned at 2×2 pixels and all exposures were 300 seconds.

Data processing and analysis were done with *MPO Canopus* (Warner, 2018). All images were calibrated with dark and flat-field frames and the instrumental magnitudes converted to R magnitudes using solar-colored field stars from a version of the CMC-15 catalogue distributed with *MPO Canopus*. Table I shows the observing circumstances and results.

A search through the asteroid lightcurve database (LCDB; Warner et al., 2009) indicates that our result may be the first reported lightcurve observations and results for this asteroid.

3616 Glazunov (1984 JJ2) was discovered on 1984 May 3 at Nauchnyj by L. V. Zhuravleva and named in honor of Il'ya Sergeevich Glazunov, a well-known Russian painter who died in 2017. It is a main-belt asteroid with a semi-major axis of 2.600 au, eccentricity 0.123, inclination 12.769° , and an orbital period of 4.19 years. Its absolute magnitude is $H = 12.40$ (JPL, 2022). The WISE/NEOWISE satellite infrared radiometry survey (Masiero et al., 2014) found a diameter $D = 9.811 \pm 0.145$ km using an absolute magnitude $H = 12.2$.

Observations were conducted over nine nights and collected 275 data points. The period analysis shows a possible solution for the rotational period at $P = 18.932 \pm 0.004$ h with an amplitude $A = 0.14 \pm 0.03$ mag as the most likely bimodal solution for this asteroid. Because of the low amplitude and the precision of the photometry due to the not optimal sky conditions, further observations are highly recommended in future apparitions to verify the result.



References

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| Number | Name | 2022/mm/dd | Phase | L _{PAB} | B _{PAB} | Period(h) | P.E. | Amp | A.E. | Grp |
|--------|----------|-------------|-----------|------------------|------------------|-----------|-------|------|------|-----|
| 3616 | Glazunov | 05/31-07/03 | *8.1,12.3 | 259 | 11 | 18.932 | 0.004 | 0.14 | 0.03 | EUN |

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).