ROTATION PERIOD DETERMINATION OF THE ASTEROID 5321 JAGRAS (1985 VN)

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Photometric observations were made in 2018 of the main-belt asteroid 5321 Jagras (1985 VN). Analysis of the collected data suggests a period of 2.638 ± 0.001 h.

Photometric observations of the main-belt asteroid 5321 Jagras (1985 VN) were taken at the Astronomical Observatory of the University of Siena (K54), Italy, and at the Wild Boar Remote Observatory (K49), Italy. Exposure time was 300 seconds at both the observatories. Table I shows the main features of the instruments used at the observatories involved in the research while Table II gives the observation circumstances and results.

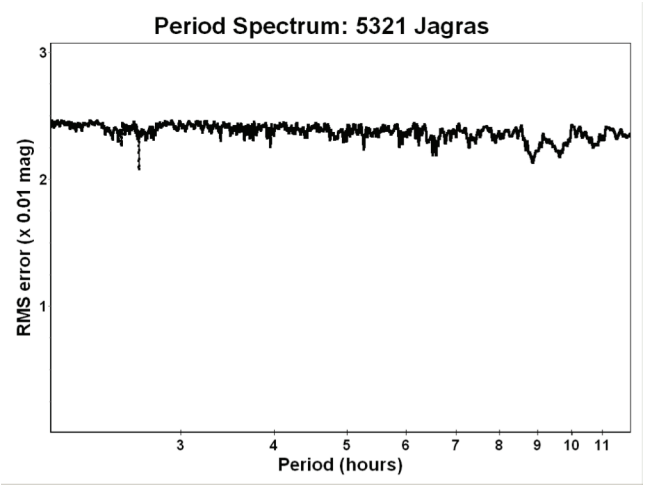
Observatory	Telescope	Filter	CCD
K54	0.30 m f/5.6 MCT	Clear	SBIG STL-6303 2x2 2.3”/pixel
K49	0.24 m f/10 SCT	Clear	SBIG ST8-XME 2x2 1.6”/pixel

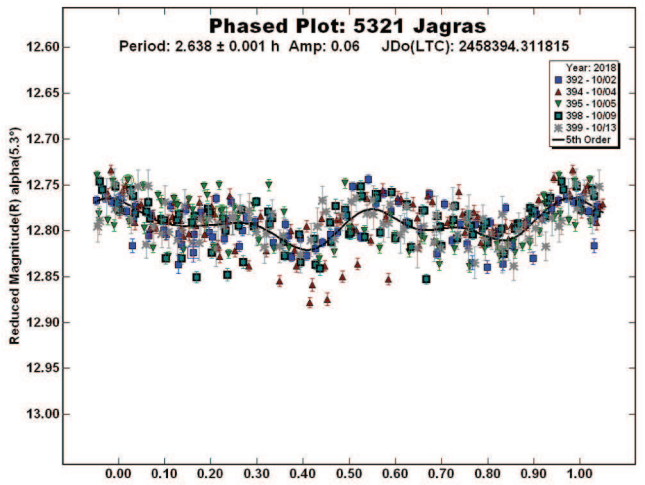
Table 1- Main features of the instruments used at the observatories involved in the research. MCT = Maksutov-Cassegrain; SCT = Schmidt-Cassegrain

The authors performed differential photometry measurements using the Comp Star Selector (CSS) procedure in *MPO Canopus* (Warner, 2018) that allows selecting of up to five comparison stars of near solar color. The magnitudes from the CMC-15 catalog (Munos, 2017) were used for the comparison stars. Period analysis was performed using *MPO Canopus* and its FALC (Fourier Analysis for Light Curves) algorithm (Harris *et al.*, 1989). In the end we carried out additional adjustments of the magnitude zero-points for each data set out in order to reach the minimum RMS value from the Fourier analysis and so achieve the best alignment among lightcurves.

A search of the Asteroid Light Curve Database (LCDB; Warner *et al.*, 2009) and literature found no previous entries.

5321 Jagras (1985 VN) is a middle main-belt asteroid and was discovered at Brorfelde on 1985-11-14 by P. Jensen, K. Augustesen, and H. J. Fogh Olsen. Named in honor of Jakob Grove Rasmussen, fiancé of the daughter of the third discoverer, currently graduating in astronomy at the Copenhagen Observatory. [Ref: Minor Planet Circ. 29144].





Observations were made on five nights from 2018 October, 2nd to October 13th, collecting 394 useful data points. The very low amplitude and the associated high dispersion makes very difficult the period analysis. The low amplitude might be the result from a spheroidal shape of the body or from a polar view caused by the geometrical condition of the orbit at this opposition. However, the period analysis yielded two possible solutions with nearly comparable RMS values. We concluded that the most likely value of the synodic period is associated with a bimodal lightcurve phased to 2.638 ± 0.001 h with an amplitude of 0.06 ± 0.02 mag. Further observations during next opposition would be welcome in order to verify the lightcurve and therefore the rotational period here proposed. In the end, despite of the dispersion, a few attenuations in the lightcurve are visible and they are worth of further observations.

Number	Name	2018 mm/dd	Pts	Phase	L_{PAB}	B_{PAB}	Period(h)	P.E	Amp	A.E.
5321	Jagras (1985 VN)	10/02-12/12	394	5.2,4.0	15	5	2.638	0.001	0.06	0.02

Table II. Observing circumstances and results. Pts is the number of data points. The phase angle values are for the first date and the 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).

References

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LIGHTCURVE PHOTOMETRY OPPORTUNITIES: 2019 APRIL-JUNE

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We present lists of asteroid photometry opportunities for objects reaching a favorable apparition and have no or poorly-defined lightcurve parameters. Additional data on these objects will help with shape and spin axis modeling via lightcurve inversion. We also include lists of objects that will or might be radar targets. Lightcurves for these objects can help constrain pole solutions and/or remove rotation period ambiguities that might not come from using radar data alone.

We present several lists of asteroids that are prime targets for photometry during the period 2019 April through June.

In the first three sets of tables, "Dec" is the declination and "U" is the quality code of the lightcurve. See the asteroid lightcurve data base (LCDB; Warner et al., 2009) documentation for an explanation of the U code:

http://www.minorplanet.info/lightcurvedatabase.html

The ephemeris generator on the CALL web site allows you to create custom lists for objects reaching V ≤ 18.0 during any month in the current year, e.g., limiting the results by magnitude and declination.

http://www.minorplanet.info/PHP/call_OppLCDBQuery.php

We refer you to past articles, e.g., *Minor Planet Bulletin* **36**, 188, for more detailed discussions about the individual lists and points of advice regarding observations for objects in each list.

Once you've obtained and analyzed your data, it's important to publish your results. Papers appearing in the *Minor Planet Bulletin* are indexed in the Astrophysical Data System (ADS) and so can be referenced by others in subsequent papers. It's also important to make the data available at least on a personal website or upon request. We urge you to consider submitting your raw data to the ALCDEF database. This can be accessed for uploading and downloading data at

http://www.alcdef.org