

PHOTOMETRIC OBSERVATIONS OF ASTEROIDS 1626 SADEYA, 5552 STUDNICKA AND 5565 UKYOUNODAIBU

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Photometric observations of three main-belt asteroids were conducted to determine their synodic rotation periods. We found: for 1626 Sadeya, $P = 3.421 \pm 0.002$ h with $A = 0.11 \pm 0.01$ mag; for 5552 Studnicka, $P = 5.912 \pm 0.001$ h with $A = 0.12 \pm 0.02$ mag; for 5565 Ukyounodaibu, $P = 5.752 \pm 0.001$ h with $A = 0.20 \pm 0.03$ mag.

CCD photometric observations of three main-belt asteroids were carried out in November-December 2024 at the Astronomical Observatory of the University of Siena (K54). We used a 0.30-m $f/5.6$ Maksutov-Cassegrain telescope, SBIG STL-6303E NABG CCD camera; the pixel scale was 2.30 arcsec when binned at 2×2 pixels. For 1626 Sadeya we used a Rc filter and 180 seconds of exposure time, for the other asteroids we used a Clear filter and 300 seconds of exposure time.

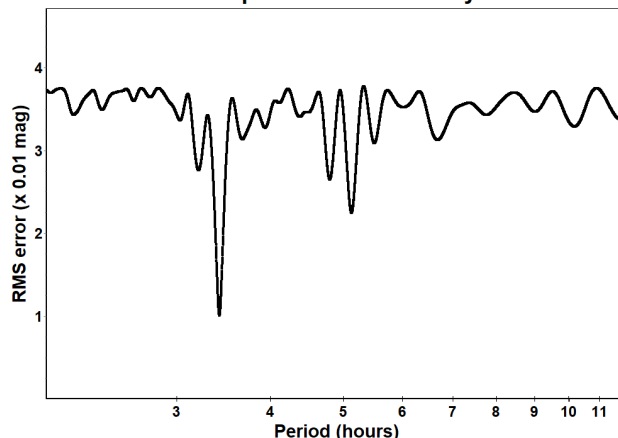
Data processing and analysis were done with *MPO Canopus* (Warner, 2018). All images were calibrated with dark and flat-field frames and the instrumental magnitudes converted to R magnitudes using solar-colored field stars from a version of the CMC-15 catalogue distributed with *MPO Canopus*. Table I 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 5552 Studnicka.

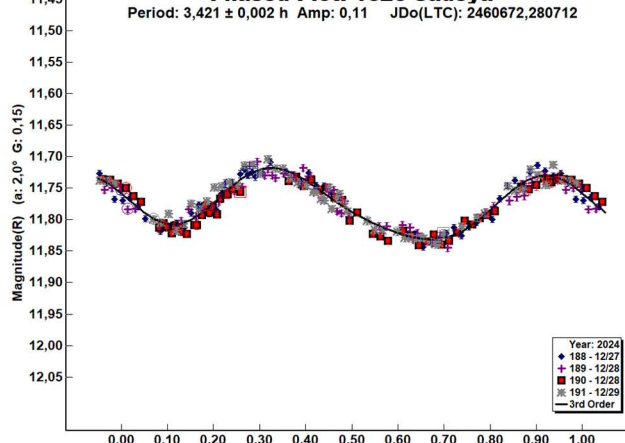
1626 Sadeya (1927 AA) was discovered by J. Comas Sola at Barcelona on 1927 January 10 and named in honor of the Sociedad Astronómica de España y América. It is an inner main-belt asteroid with a semi-major axis of 2.364 AU, eccentricity 0.274, inclination 25.319° , and an orbital period of 3.63 years. Its absolute magnitude is $H = 11.10$ (JPL, 2025). The NEOWISE satellite infrared radiometry survey (Mainzer et al., 2016) found a diameter $D = 15.140 \pm 0.490$ km using an absolute magnitude $H = 10.50$. In 2020 the binary nature of this asteroid was discovered by the authors among the BinAst (Photometric Survey for Asynchronous Binary Asteroids) collaboration (Pravec, 2024web) and announced through a CBET (Benishek, 2020).

Observations were conducted over two nights and collected 229 data points. The period analysis confirms a rotational period of $P = 3.421 \pm 0.002$ h with an amplitude $A = 0.11 \pm 0.01$ mag, in perfect agreement with previously reported results by multiple researchers as listed in the LCDB. We did not record any events introduced by the satellite during our observations.

Period Spectrum: 1626 Sadeya



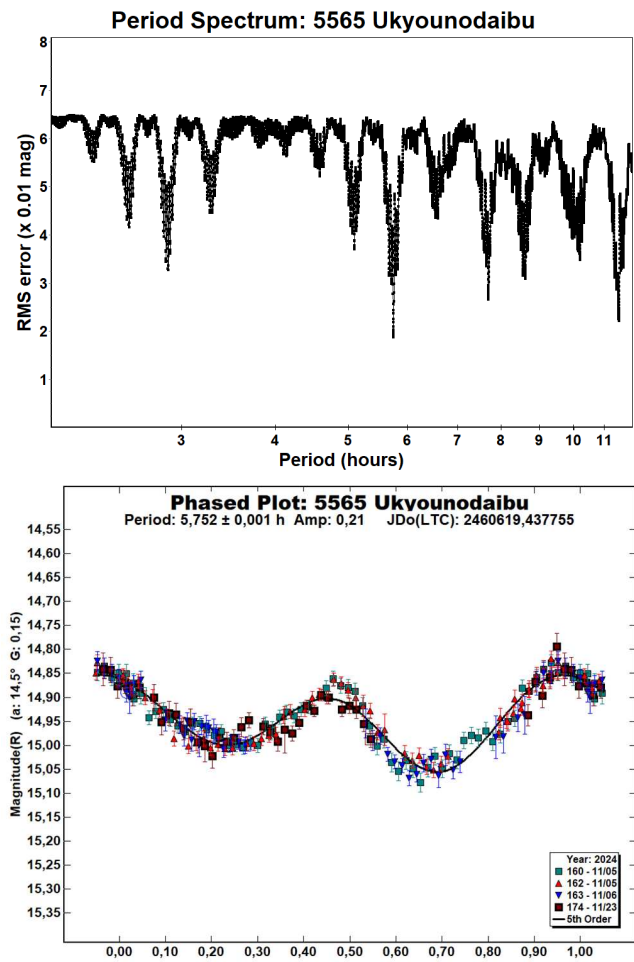
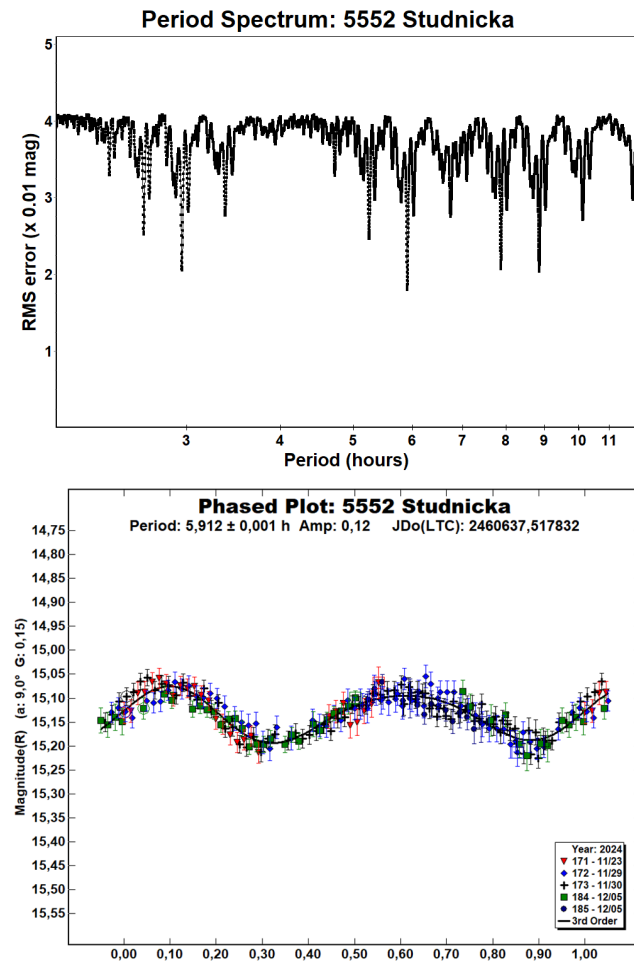
Phased Plot: 1626 Sadeya



5552 Studnicka (1982 SJ1) was discovered on 1982 September 16 by A. Mrkos at Klet and named in memory of František Josef Studnicka (1836-1903), professor of mathematics at Charles University in Prague, also active in astronomy and meteorology. It is an outer main-belt asteroid with a semi-major axis of 2.776 AU, eccentricity 0.248, inclination 8.218° , and an orbital period of 4.62 years. Its absolute magnitude is $H = 12.97$ (JPL, 2025). The NEOWISE satellite infrared radiometry survey (Mainzer et al., 2016) found a diameter $D = 7.331 \pm 0.106$ km using an absolute magnitude $H = 12.70$. Observations were conducted over four nights and collected 233 data points. The period analysis shows a rotational period of $P = 5.912 \pm 0.001$ h with an amplitude $A = 0.12 \pm 0.02$ mag.

Number	Name	2024/mm/dd	Phase	L _{PAB}	B _{PAB}	Period(h)	P.E.	Amp	A.E.	Grp
1626	Sadeya	12/27-12/29	*2.0, 2.0	96	2	3.421	0.002	0.11	0.01	MB-I
5552	Studnicka	11/22-12/05	*9.0, 7.2	71	-11	5.912	0.001	0.12	0.02	MB-O
5565	Ukyounodaibu	11/04-11/23	14.6, 8.3	67	-14	5.752	0.001	0.20	0.03	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 extremum 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).



5565 Ukyounodaibu (1991 VN2) was discovered on 1991 November 10 by Natori and Urata at Yakiimo and named for the Japanese poetess, Kenreimon-in Ukyounodaibu (1157-?). It is an outer main-belt asteroid with a semi-major axis of 2.810 AU, eccentricity 0.217, inclination 10.306° , and an orbital period of 4.71 years. Its absolute magnitude is $H = 12.24$ (JPL, 2025). The NEOWISE satellite infrared radiometry survey (Mainzer et al., 2016) found a diameter $D = 12.286 \pm 0.279$ km using an absolute magnitude $H = 11.90$.

Observations were conducted over four nights and collected 212 data points. The period analysis shows a rotational period of $P = 5.752 \pm 0.001$ h with an amplitude $A = 0.20 \pm 0.03$ mag, in agreement with the one published in the LCDB (Behrend, 2024web).

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