COLLABORATIVE ASTEROID PHOTOMETRY FROM UAI: 2025 OCTOBER-DECEMBER

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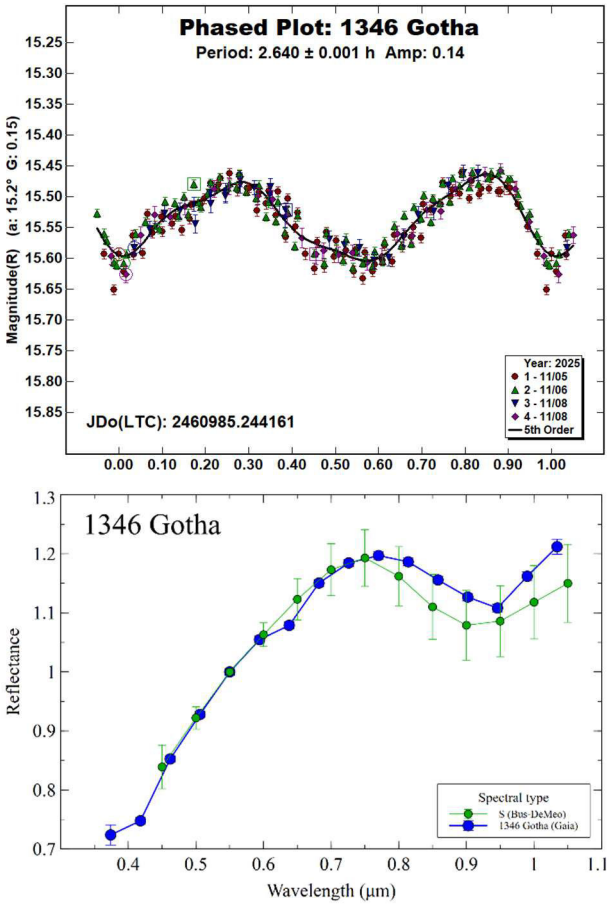
Photometric observations of three asteroids were made in order to acquire lightcurves for shape/spin axis modeling. Lightcurves were acquired for 1346 Gotha, 1551 Argelander, and 4807 Noboru.

Collaborative asteroid photometry was done inside the Italian Amateur Astronomers Union (UAI, 2025) group. The targets were selected mainly in order to acquire lightcurves for shape/spin axis modeling. Table I shows the observing circumstances and results.

The CCD/CMOS photometric observations were made in 2025 October-December using the instrumentation described in Table II. Lightcurve analysis was done by Papini and Iozzi (UAI group, 2025) with *MPO Canopus* (Warner, 2023). All the images were calibrated with dark and flat frames and converted to standard magnitudes using solar-colored field stars from CMC15 and ATLAS catalogues, distributed with *MPO Canopus*. For brevity, "LCDB" is a reference to the asteroid lightcurve database (Warner et al., 2009).

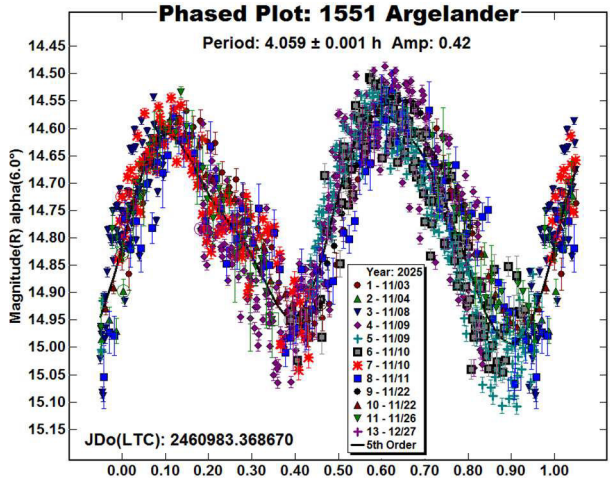
1346 Gotha is a middle main-belt asteroid historically classified as a S-type. Collaborative observations were made over three nights. We found a bimodal solution with a synodic period of P = 2.640 ± 0.001 h and an amplitude A = 0.14 ± 0.02 mag. The period is close to the previously published results in the LCDB.

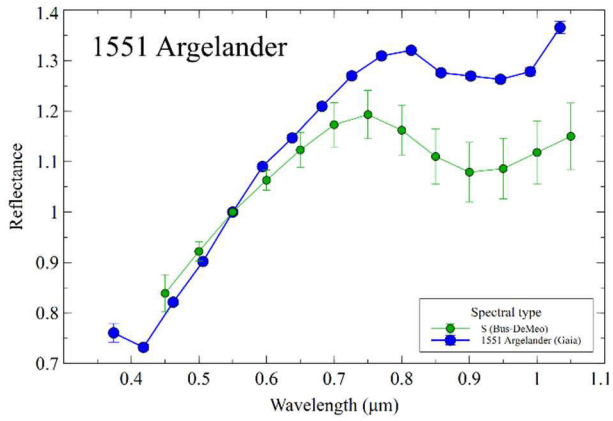
The reflectance spectrum for 1346 Gotha, extracted from Gaia ESA Archive (2025), is close to a S-type when compared with the Bus-DeMeo taxonomy (DeMeo et al., 2009) and also agrees with the taxonomic attribution by Franco (2025). The B-V = 0.84 value listed in the JPL Small-Body Database is also consistent with the reference index for S-types (Shevchenko and Lupishko, 1998; B-V = 0.86 ± 0.04).

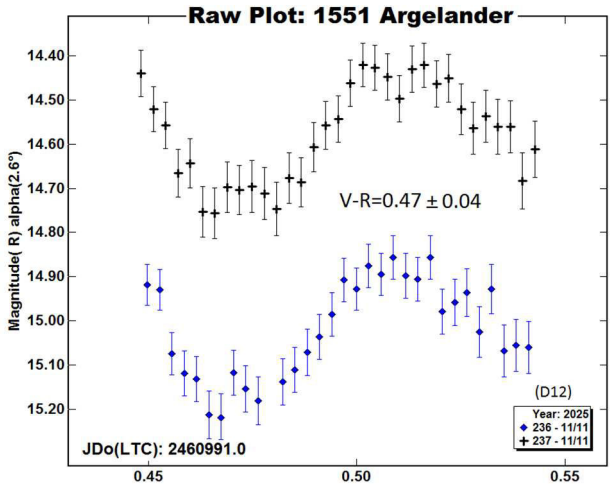


1551 Argelander is an inner main-belt asteroid historically classified as a S-type. Collaborative observations were made over nine nights. We found a bimodal solution with a synodic period of P = 4.059 ± 0.001 h and an amplitude A = 0.42 ± 0.08 mag. The period is close to the previously published results in the LCDB.

The reflectance spectrum for 1551 Argelander, extracted from Gaia ESA Archive (2025), is close to a S-type when compared with the Bus-DeMeo taxonomy (DeMeo et al., 2009) and also agrees with the taxonomic attribution by Franco (2025). Multiband photometry was acquired by G. Casalnuovo (D12) on 2025 November 12, A. Valvasori (G18) on 2025 November 28, by G. Ferrini and M. Iozzi (K83) on 2025 December 5 and by M. Iozzi (L63) on 2025 December 27. From these observations, we found a mean color index V-R = 0.47 ± 0.04 mag, which is consistent with a S-Type asteroid (Shevchenko and Lupishko, 1998; 0.49 ± 0.05).

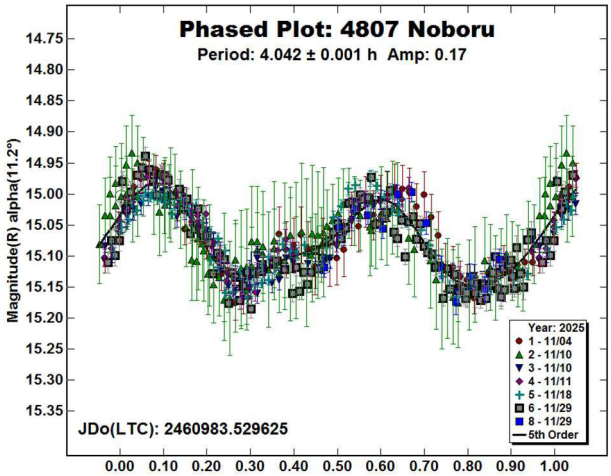


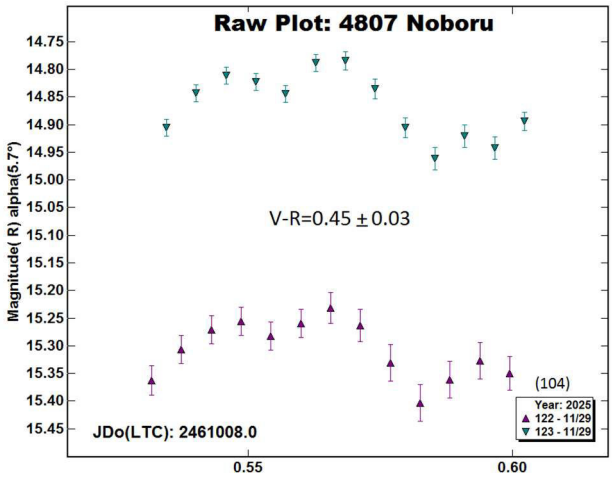


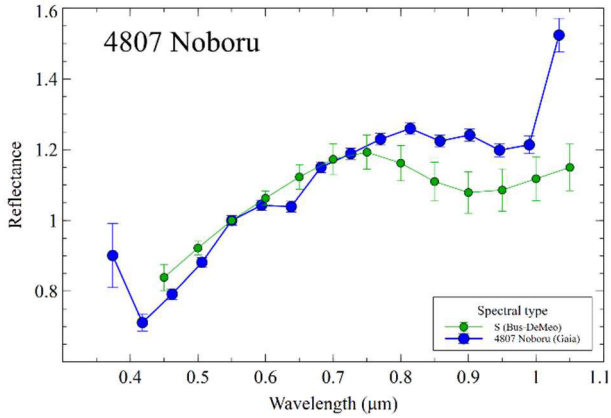


4807 Noboru is an inner main-belt asteroid historically classified as a S-type. Collaborative observations were made over five nights. We found a bimodal solution with a synodic period of P = 4.042 ± 0.001 h and an amplitude A = 0.17 ± 0.02 mag. The period is close to the previously published results in the LCDB.

The reflectance spectrum for 4807 Noboru, extracted from Gaia ESA Archive (2025), is close to a S-type when compared with the Bus-DeMeo taxonomy (DeMeo et al., 2009) and also agrees with the taxonomic attribution by Franco (2025). Multiband photometry was acquired by G. Casalnuovo (D12) on 2025 November 26 and P. Bacci and M. Maestripieri (104) on 2025 November 29, from which we found a color index V-R = 0.45 ± 0.03 mag, which is close to a S-Type asteroid (Shevchenko and Lupishko, 1998; 0.49 ± 0.05).







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Number	Name	2025 mm/dd	Phase	L_{PAB}	B_{PAB}	Period(h)	P.E.	Amp	A.E.	Grp
1346	Gotha	11/05-11/08	15.2-16.3	17	-12	2.640	0.001	0.14	0.02	MB-M
1551	Argelander	11/03-12/27	*6.0-18.8	52	-4	4.059	0.001	0.42	0.08	MB-I
4807	Noboru	11/04-11/29	*10.6-5.6	59	1	4.042	0.001	0.17	0.02	MB-I

Table I. Observing circumstances and results. The first line gives the results for the primary of a binary system. The second line gives the orbital period of the satellite and the maximum attenuation. 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).

Observatory (MPC code)	Telescope	CCD/CMOS	Filters	Observed Asteroids (#Sessions)
GAMP (104)	0.60-m NRT f/4.0	Apogee Alta	C, V, Rc	4807(5)
Osservatorio Astronomico Nastro Verde (C82)	0.35-m SCT f/6.3	SBIG ST10XME (bin 2×2)	C	1346(2), 4807 (1)
Filzi School Observatory (D12)	0.35-m NRT f/8.0	QHY9 (bin 4×4)	C, V, Rc	4807(2), 1551 (1)
Beato Ermanno Astronomical Observatory (L73)	0.31-m SCT F/6.0	QHY174M (bin 2×2)	Rc	1551(3)
GiaGa Observatory (203)	0.36-m SCT f/5.8	Moravian G2-3200	C, Rc	1551(2)
45th Parallel Observatory (D43)	0.25-m RCT f/5.6	IMX533	C	1551(2)
ALMO Observatory (G18)	0.30-m NRT f/4.0	ZWO ASI533MM PRO	V, Rc	1551(1)
Astronomical Observatory, University of Siena (K54)	0.30-m MCT f/5.6	SBIG STL-6303e (bin 2×2)	C	1346(1)
Iota Scorpii(K78)	0.40-m RCT f/6.1	Player One 455M Pro (bin 4×4)	Rc	4807(1)
GRAM - Osservatorio Astronomico Beppe Forti (K83)	0.25-m SCT f/6.3	ATIK 383L+ (bin 2×2)	V, Rc	1551(1)
HOB Astronomical Observatory (L63)	0.20-m SCT f/6.0	ATIK 383L+ (bin 2×2)	V,Rc	1551(1)

Table II. Observing Instrumentations. NRT: Newtonian Reflector, MCT: Maksutov-Cassegrain, RCT: Ritchey-Chretien, SCT: Schmidt-Cassegrain.