ASTEROID PHOTOMETRY OF EIGHT ASTEROIDS

Milagros Colazo
Astronomical Observatory Institute, Faculty of Physics,
Adam Mickiewicz University,
ul. Słoneczna 36, 60-286 Poznań, Poland.
Grupo de Observadores de Rotaciones de Asteroides (GORA),
Argentina, https://aoacm.com.ar/gora/index.php
milirita.colazovinovo@gmail.com

Bruno Monteleone
Osservatorio Astronomico "La Macchina del Tempo" (MPC M24)
Ardore Marina (Reggio Calabria - Italia)

Francisco Santos
Observatorio Astronómico Giordano Bruno (MPC G05)
Piconcillo (Córdoba - España)

Alberto García
Observatorio Río Cofio (MPC Z03)
Robledo de Chavela (Madrid - España)

Giuseppe Ciancia
CapoSudObservatory (GORA CS1)
Palizzi Marina (Reggio Calabria - Italia)
CapoSudObservatory (GORA CS2)
Palizzi Marina (Reggio Calabria - Italia)
Specola "Giuseppe Pustorino 3" (GORA GC3)
Palizzi Marina (Reggio Calabria - Italia)

Mario Morales
Observatorio de Sencelles (MPC K14)
Sencelles (Mallorca - Islas Baleares - España)

Raúl Melia
Observatorio de Raúl Melia Carlos Paz (GORA RMC)
Carlos Paz (Córdoba - Argentina)

Tiago Speranza, Axel Ortiz
Observatorio Astronómico Municipal Reconquista (GORA OMR)
Reconquista (Santa Fe - Argentina)

Damián Scotta
Observatorio de Damián Scotta 1 (GORA ODS)
San Carlos Centro (Santa Fe - Argentina)

Néstor Suárez
Observatorio Antares (MPC X39)
Pilar (Buenos Aires - Argentina)

Paolo Aldinucci
Osservatorio Astronomico di Orciatico (OAL)
Lajatico (Pisa - Italia)

Nicola Montecchiari
Elijah Observatory (MPC M27)
Lajatico (Pisa - Italia)

Aldo Wilberger
Observatorio Los Cabezones (MPC X12)
Santa Rosa (La Pampa - Argentina)

Marcos Anzola
Observatorio Astronómico Vuelta por el Universo (GORA OMA)
Córdoba (Córdoba - Argentina)

Carlos Colazo
Observatorio Astronómico El Gato Gris (MPC I19)
Tanti (Córdoba - Argentina)

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Synodic rotation periods and amplitudes are reported for: 343 Ostara, 366 Vincentina, 892 Seeligeria, 914 Palisana, 1112 Polonia, 1237 Genevieve, 1332 Marconia, and 1496 Turku.

The periods and amplitudes of asteroid lightcurves presented in this paper are the product of collaborative work by the GORA (Grupo de Observadores de Rotaciones de Asteroides) group. In all the studies, we have applied relative photometry assigning *V* magnitudes to the calibration stars.

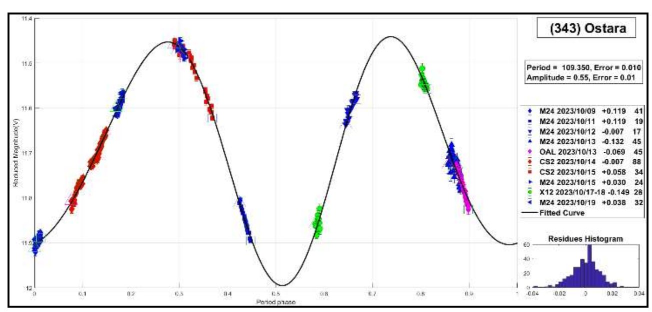
The image acquisition was performed without filters and with exposure times of a few minutes. All images used were corrected using dark frames and, in some cases, bias and flat-field corrections were also used. Photometry measurements were performed using *FotoDif* software and for the analysis, we employed *Períodos* software (Mazzone, 2012).

Below, we present the results for each asteroid studied. The lightcurve figures contain the following information: the estimated period and period error and the estimated amplitude and amplitude error. In the reference boxes, the columns represent, respectively, the marker, observatory MPC code, or - failing that - the GORA internal code, session date, session offset, and several data points.

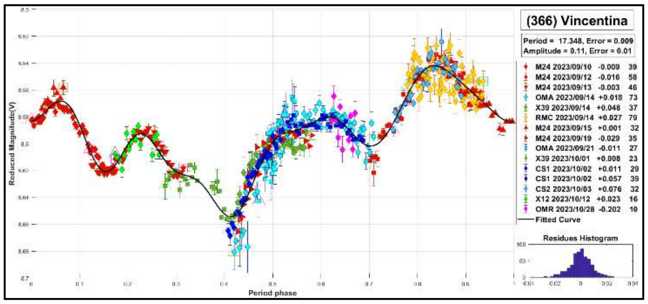
Targets were selected based on the following criteria: 1) those asteroids with magnitudes accessible to the equipment of all participants, 2) those with favorable observation conditions from Argentina or Spain, i.e., with negative or positive declinations δ, respectively, and 3) objects with few periods reported in the literature and/or with Lightcurve Database (LCDB) (Warner et al., 2009) quality codes (U) of less than 3.

In this work, we present measurements of periods corresponding to asteroids previously analyzed by our team. These light curves display improved results and are part of a new long-term project that we are initiating.

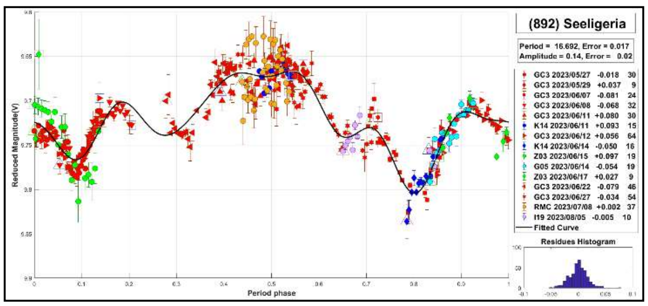
343 Ostara. This asteroid was discovered in 1892 by M. Wolf. In the literature, we found two rather different periods calculated for this object: P = 6.42 h (Binzel, 1987) and P = 110.027 ± 0.001 h (Martikanien et al., 2021). The results we obtained, P = 109.35 ± 0.01 h with Δm = 0.55 ± 0.01 mag, are consistent with the longer period proposed by Martikanien.



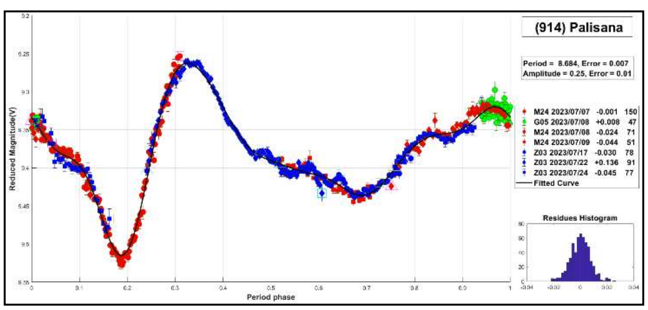
366 Vincentina. This asteroid was discovered in 1893 by A. Charlois. Two different periods were reported in the literature. Robinson (2002) found a period of 15.5 ± 0.1 h, whereas Benishek (2013) measured a period of P = 12.7365 ± 0.0005 h. In this work, we provide similar results and propose P= 17.348 ± 0.0009 h and Δm = 0.11 ± 0.01 mag. This diagram validates our previous result (Colazo et al., 2021).



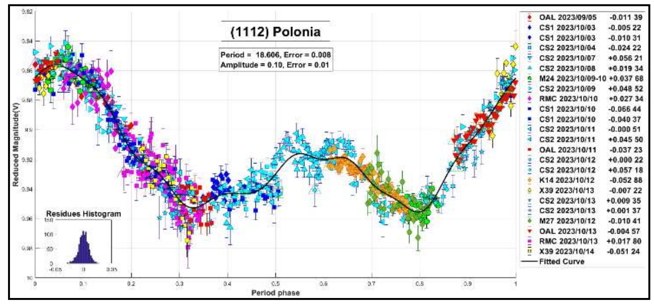
892 Seeligeria. This asteroid was discovered in 1918 by M. Wolf. Several periods were measured for this asteroid with the following results: $P = 41.40 \pm 0.02$ h (Behrend, 2007web), $P = 15.78 \pm 0.04$ h (Shipley et al., 2008), and $P = 16.693 \pm 0.008$ h (Colazo et al., 2023). We have determined a period of 16.692 ± 0.017 h with $\Delta m = 0.14 \pm 0.02$ mag, which is consistent with our previous result.



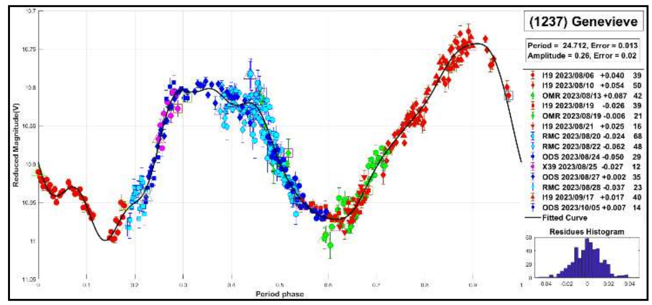
914 Palisana. This asteroid was discovered in 1919 by M. Wolf. The more recent period published in the literature corresponds to $P = 8.681 \pm 0.010$ h (Colazo et al., 2022). We have determined a period of 8.684 ± 0.007 h with $\Delta m = 0.25 \pm 0.01$ mag, which is consistent with our previous result. This diagram was derived from high-quality curves, and the ephemerides were covered as expected.



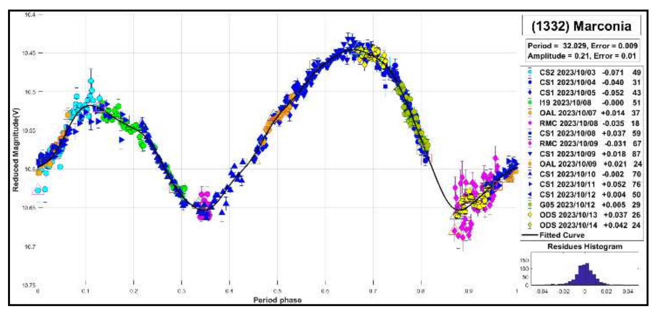
1112 Polonia. This asteroid was discovered in 1928 by P. Shajn. We found in the literature two rather different periods calculated for this object: $P = 82.5 \pm 0.5$ h (Warner, 2008) and $P = 18.71 \pm 0.04$ h (Polakis, 2020). The results we obtained are $P = 18.606 \pm 0.008$ h and $\Delta m = 0.10 \pm 0.01$ mag. Our period well agrees with the one measured by Polakis.



1237 Genevieve. This asteroid was discovered in 1931 by G. Reiss. The two more recent periods published in the literature correspond to $P = 24.82 \pm 0.07$ h (Behrend, 2005web) and $P = 16.31 \pm 0.04$ h (Polakis, 2022). We have determined a period of 24.712± 0.013 h, which is consistent with the longer period proposed by Beherend.



1332 Marconia. This asteroid was discovered in 1934 by L. Vorta. The more recent period published in the literature corresponds to $P = 19.16 \pm 0.01$ h (Stephens, 2013). In this work, we provide rather different results and propose a longer period of $P = 32.029 \pm 0.009$ h and $\Delta m = 0.21 \pm 0.01$ mag.



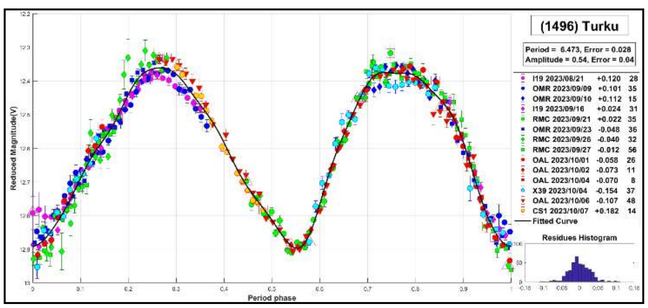
1496 Turku. This asteroid was discovered in 1938 by Y. Vaisala. The more recent period published in the literature corresponds to $P = 6.47375 \pm 0.00001$ h (Ďurech et al., 2016). We have determined a period of 6.473 ± 0.028 h with $\Delta m = 0.54 \pm 0.04$ mag, which is consistent with the one proposed by Ďurech.

Number	Name	yy/ mm/dd- yy/ mm/dd	Phase	L_{PAB}	B_{PAB}	Period(h)	P.E.	Amp	A.E.	Grp
343	Ostara	23/10/09-23/10/27	13.3,02.4	35	-1	109.270	0.012	0.52	0.02	MB-I
366	Vincentina	23/09/10-23/10/29	01.4,16.3	343	1	17.348	0.009	0.11	0.01	MB-O
892	Seeligeria	23/05/27-23/08/06	*08.7,15.1	257	25	16.692	0.017	0.14	0.02	MB-O
914	Palisana	23/07/07-23/07/27	22.4,20.4	310	29	8.684	0.007	0.25	0.01	MB-I
1112	Polonia	23/09/05-23/10/14	*13.7,05.6	14	11	18.606	0.008	0.10	0.01	Eos
1237	Genevieve	23/08/06-23/10/05	06.5,22.2	311	-12	24.712	0.013	0.26	0.02	MB-M
1332	Marconia	23/10/03-23/10/12	07.0,03.1	25	0	32.029	0.009	0.21	0.01	Marc
1496	Turku	23/08/21-23/10/07	*03.8,21.5	334	3	6.473	0.028	0.54	0.04	MB-I

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. LPAB and BPAB 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). MB-I: main-belt inner; MB-O: main-belt outer; Eos: 221 Eos; MB-M: main-belt middle; Marc: 1332 Marconia.

Observatory	Telescope	Camera
G05 Obs.Astr.Giordano Bruno	SCT (D=203mm; f=6.3)	CCD Atik 420 m
I19 Obs.Astr.El Gato Gris	SCT (D=355mm; f=10.6)	CCD SBIG STF-8300M
K14 Obs.Astr.de Sencelles	Newtonian (D=250mm; f=4.0)	CCD SBIG ST-7XME
M24 Oss.Astr.La Macchina del Tempo	RCT (D250mm; f=8.0)	CMOS ZWO ASI 1600MM
X12 Obs.Astr.Los Cabezones	Newtonian (D=200mm; f=5.0)	CMOS QHY 174M
M27 Elijah Observatory	RCT (D250mm; f=6.0)	CCD QSI 683
X39 Obs.Astr.Antares	Newtonian (D=250mm; f=4.72)	CCD QHY9 Mono
Z03 Obs.Astr.Río Cofio	SCT (D=254mm; f=6.3)	CCD SBIG ST-8XME
CS1 CapoSudObservatory	RCT (D=400mm; f=5.7)	CCD Atik 383L+Mono
CS2 CapoSudObservatory	Newtonian (D=254mm; f=4.7)	CCD Atik 420 Mono
GC3 Specola Giuseppe Pustorino 3	RCT (D=400mm; f=5.7)	CCD Atik 383L+Mono
OAL Osservatorio Astronomico di Orciatico	SCT (D=355mm; f=7.4)	CCD SBIG ST10XME
ODS Obs.Astr.de Damián Scotta 1	Newtonian (D=300mm; f=4.0)	CMOS QHY 174M
OMA Obs.Astr.Vuelta por el Universo	Newtonian (D=150mm; f=5.0)	CMOS POA Neptune-M
OMR Obs.Astr.Municipal Reconquista	Newtonian (D=254mm; f=4.0)	Player One Ceres-M
RMC Obs.Astr.de Raúl Melia Carlos Paz	Newtonian (D=254mm; f=4.7)	CMOS QHY 174M

Table II. List of observatories and equipment.



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