



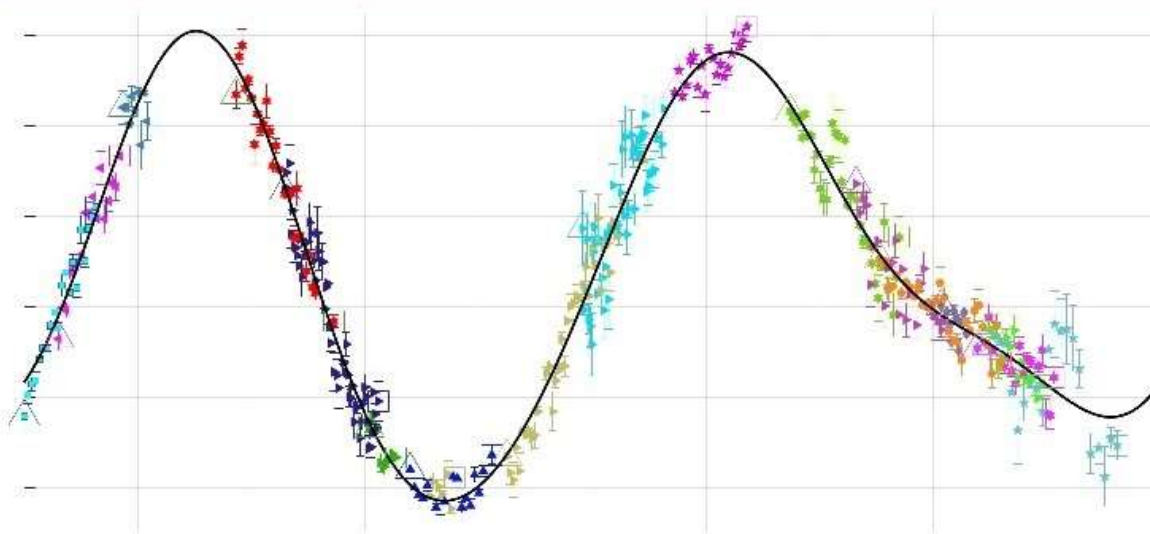
GORA

Grupo de Observadores de Rotaciones de Asteroides

V JORNADAS GORA-POEVE

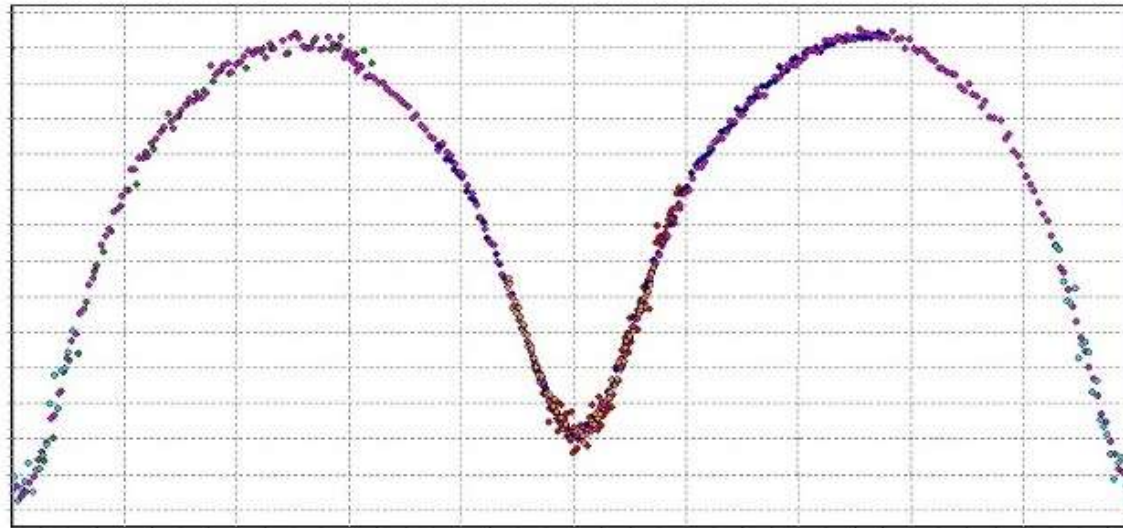
Viernes 12 de marzo de 2021 - 20:00 horas

Reunión virtual



TEMARIO

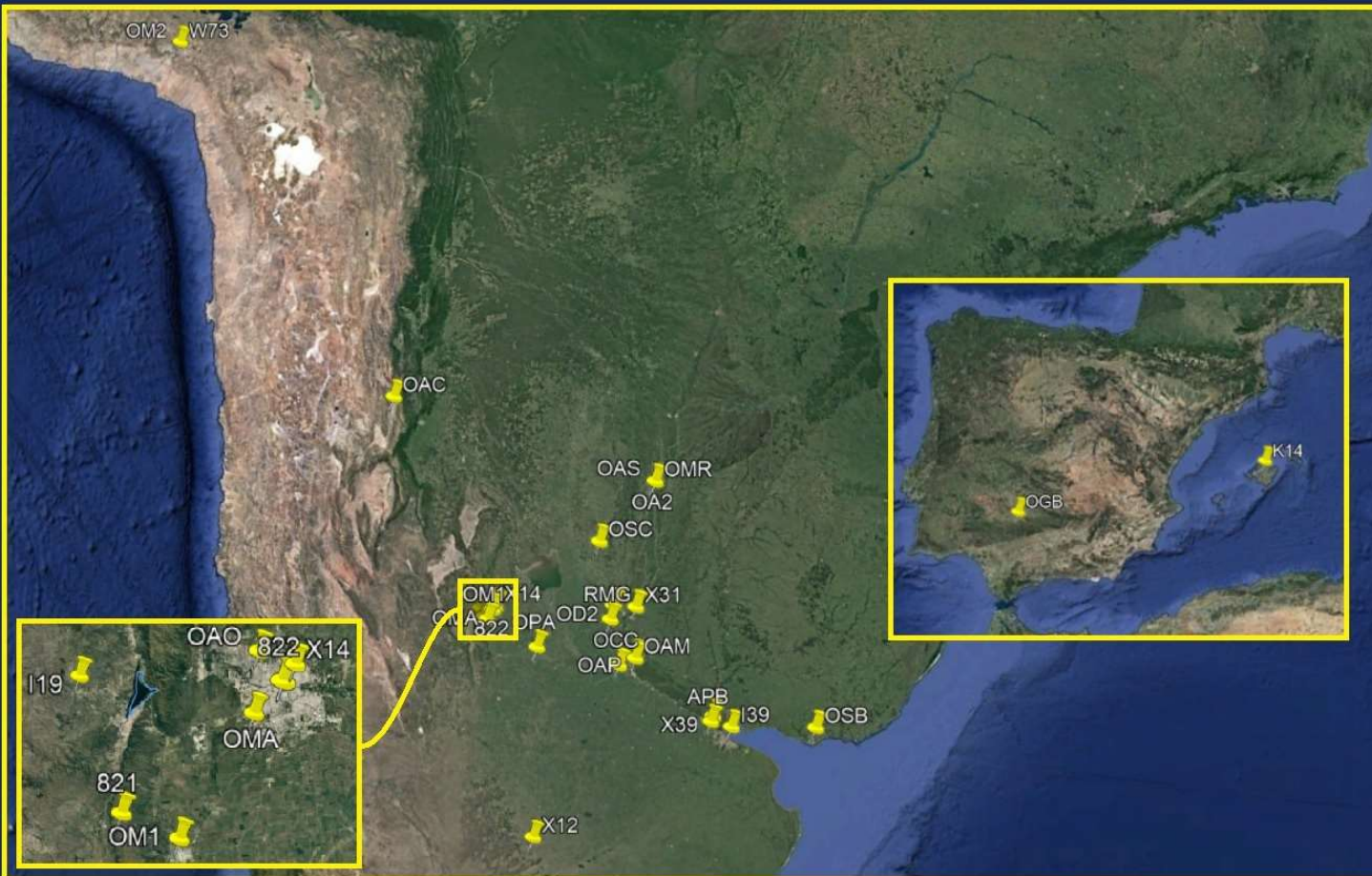
- 1 Rotación de asteroides - Evaluación del proyecto GORA
- 2 Binarias eclipsantes - Evaluación del proyecto POEVE
- 3 Ocultaciones Asteroidales - Proyecto POCROA
- 4 Tránsitos de Exoplanetas - Proyecto POTE
- 5 Plan de trabajo para 2021



Observatorios de GORA

OBSERVATORIOS GORA AL 09/03/2021

Estación Astrofísica Bosque Alegre (MPC 821)
 Observatorio Astronómico Córdoba (MPC 822)
 Observatorio Astronómico El Gato Gris (MPC I19)
 Observatorio Cruz del Sur (MPC I39)
 Observatorio de Sencelles (MPC K14)
 Observatorio Los Cabezones (MPC X12)
 Observatorio Orbis Tertius (MPC X14)
 Observatorio Galileo Galilei (MPC X31)
 Observatorio Antares (MPC X39)
 Observatorio Astronómico de Moquegua 1 (MPC W73)
 Observatorio AstroPilar (GORA APB)
 Observatorio Astronómico Calchaquí (GORA OAC)
 Observatorio de Aldo Mottino (GORA OAM)
 Observatorio Astronómico Aficionado Omega (GORA OAO)
 Observatorio Astro Pulver (GORA OAP)
 Observatorio de Ariel Stechina 1 (GORA OAS)
 Observatorio de Ariel Stechina 2 (GORA OA2)
 Observatorio Candela Celeste (GORA OCC)
 Observatorio de Damián Scotta 1 (GORA ODS)
 Observatorio de Damián Scotta 2 (GORA OD2)
 Observatorio Astronómico Giordano Bruno (GORA OGB)
 Observatorio Astronómico Vuelta por el Universo (GORA OMA)
 Observatorio Chopis (GORA OM1)
 Observatorio Astronómico de Moquegua 2 (GORA OM2)
 Observatorio Astronómico Municipal Reconquista (GORA OMR)
 Observatorio Punto Azul (GORA OPA)
 Observatorio de Sergio Babino (GORA OSB)
 Observatorio Astronómico Municipal de San Cristóbal (GORA OSC)
 Observatorio de Raúl Melia (GORA RMG)



Observatorios de GORA

1. Estación Astrofísica Bosque Alegre (MPC 821) - Bosque Alegre (Córdoba-Argentina)
2. Observatorio Astronómico Córdoba (MPC 822) - Córdoba (Córdoba-Argentina)
3. Observatorio Astronómico El Gato Gris (MPC 119) - Tanti (Córdoba-Argentina)
4. Observatorio Cruz del Sur (MPC 139) - San Justo (Buenos Aires-Argentina)
5. Observatorio de Sencelles (MPC K14) - Sencelles (Mallorca-Islas Baleares-España)
6. Observatorio Los Cabezones (MPC X12) - Santa Rosa (La Pampa-Argentina)
7. Observatorio Orbis Tertius (MPC X14) - Córdoba (Córdoba-Argentina)
8. Observatorio Galileo Galilei (MPC X31) - Oro Verde (Entre Ríos-Argentina)
9. Observatorio Antares (MPC X39) - Pilar (Buenos Aires-Argentina)
10. Observatorio Astronómico de Moquegua 1 (MPC W73) - Cambrune (Moquegua-Perú)
11. Observatorio AstroPilar (GORA APB) - Pilar (Buenos Aires-Argentina)
12. Observatorio Astronómico Calchaquí (GORA OAC) - El Bañado (Tucumán-Argentina)
13. Observatorio de Aldo Mottino (GORA OAM) - Rosario (Santa Fe-Argentina)
14. Observatorio Astro Pulver (GORA OAP) - Rosario (Santa Fe-Argentina)
15. Observatorio de Ariel Stechina 1 (GORA OAS) - Reconquista (Santa Fe-Argentina)
16. Observatorio de Ariel Stechina 2 (GORA OA2) - Reconquista (Santa Fe-Argentina)
17. Observatorio de Damián Scotta 1 (GORA ODS) - San Carlos Centro (Santa Fe-Argentina)
18. Observatorio de Damián Scotta 2 (GORA OD2) - San Carlos Centro (Santa Fe-Argentina)
19. Observatorio Municipal de Reconquista (GORA OMR) - Reconquista (Santa Fe-Argentina)
20. Observatorio Punto Azul (GORA OPA) - Villa María (Córdoba-Argentina)
21. Observatorio de Raúl Melia (GORA RMG) - Gálvez (Santa Fe-Argentina)
22. **Observatorio Astronómico Aficionado Omega (GORA OAO) - Córdoba (Córdoba-Argentina)**
23. Observatorio Candela Celeste (GORA OCC) - Casilda (Santa Fe-Argentina)
24. **Observatorio Astronómico Giordano Bruno (GORA OGB) - Piconcillo (Córdoba-España)**
25. **Observatorio Astronómico Vuelta por el Universo (GORA OMA) - Córdoba (Córdoba-Argentina)**
26. **Observatorio Chopis (GORA OM1) - Alta Gracia - (Córdoba-Argentina)**
27. Observatorio Astronómico de Moquegua 2 (GORA OM2) - Cambrune (Moquegua-Perú)
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- 04 Ariel Stechina (OAS)
- 05 Carla Girardini (I19)
- 06 Carlos Colazo (I19)
- 07 César Fornari (X31)
- 08 Claudio Pittari (822)
- 09 Damián Scotta (ODS)
- 10 Daniela Arias (OPA)
- 11 Eduardo Pulver (OAP)
- 12 Elisa Rodríguez (I19)
- 13 Erick Meza (W73))
- 14 Ezequiel Bellocchio (APB)
- 15 Fabricio Romero (OMR)
- 16 Guillermo Amilibia (822)
- 17 Guillermo Ferrero (822)
- 18 José García (822)
- 19 Marcos Anzola (822)
- 20 Marcos Santucho (X14-822-821)
- 21 Marina Tornatore (I19)
- 22 Mario Morales (K14)
- 23 Mateo Borello (OMR)

- 24 Matías Martini (822)
- 25 Matías Suligoy (OMR)
- 26 Milagros Colazo (822-821)
- 27 Néstor Suárez (X39)
- 28 Nicolás Vasconi (OPA)
- 29 Patricio Tourne Passarino (OMR)
- 30 Raúl Melia (RMG)
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- 32 Ricardo Nolte (822)
- 33 Sergio Morero (822)
- 34 Tiago Speranza (OMR)

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- 03 Denis Martínez
- 04 Eduardo Medina (OAC)
- 05 Federico Billia
- 06 Francisco Manuel Santos (OGB)
- 07 Horacio Medina (OAC)
- 08 Leonela Barreto (OSC)
- 09 Marcos Zapata (OAC)
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- 12 Sergio Galarza (OCC)

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TRABAJOS TERMINADOS

Asteroides medidos por AOACM+GORA+GOAS+J.OEY

Orden	Número	Nombre	Período [h]	Publicados en MPB
1	1996	Adams	3.31	2011MPB-38-2_Pág 102
2	2699	Kalinin	2.93	2011MPB-38-2_Pág 102
3	918	Itha	3.47	2012MPB-39-1_Pág 1
4	2008	Konstitutsiya	11.27	2012MPB-39-1_Pág 1
5	1874	Kacivelia	15.95	2014MPB-41-1_Pág 17
6	2055	Dvorak	4.41	2014MPB-41-1_Pág 17
7	2185	Guangdong	21.09	2014MPB-41-1_Pág 17
8	8059	Deliyannis	6.00	2014MPB-41-1_Pág 17
9	179	Klytaemnestra	11.17	2020MPB-47-3_Pág 188
10	372	Palma	8.58	2020MPB-47-3_Pág 188
11	504	Cora	7.59	2020MPB-47-3_Pág 188
12	739	Mandeville	23.92	2020MPB-47-3_Pág 188
13	749	Malsovia	5.93	2020MPB-47-3_Pág 188
14	925	Alphonsina	7.88	2020MPB-47-3_Pág 188
15	1015	Christa	11.23	2020MPB-47-3_Pág 188
16	1086	Nata	18.05	2020MPB-47-3_Pág 188
17	1794	Finsen	12.35	2020MPB-47-3_Pág 188

18	414	Liriope	11.01	2020MPB-47-4_Pág 337
19	949	Hel	16.43	2020MPB-47-4_Pág 337
20	952	Caia	7.50	2020MPB-47-4_Pág 337
21	1145	Robelmonte	7.58	2020MPB-47-4_Pág 337
22	57	Mnemosyne	26.12	2021MPB-48-1_Pág 50
23	188	Menippe	11.98	2021MPB-48-1_Pág 50
24	191	Kolga	17.59	2021MPB-48-1_Pág 50
25	236	Honorio	12.34	2021MPB-48-1_Pág 50
26	261	Prymno	8.00	2021MPB-48-1_Pág 50
27	270	Anahita	15.07	2021MPB-48-1_Pág 50
28	469	Argentina	8.79	2021MPB-48-1_Pág 50
29	530	Turandot	19.94	2021MPB-48-1_Pág 50
30	584	Semiramis	5.07	2021MPB-48-1_Pág 50
31	921	Jovita	15.57	2021MPB-48-1_Pág 50
32	936	Kunigunde	8.83	2021MPB-48-1_Pág 50
33	994	Otthild	5.95	2021MPB-48-1_Pág 50
34	1157	Arabia	11.55	2021MPB-48-1_Pág 50
35	1180	Rita	29.78	2021MPB-48-1_Pág 50
36	1269	Rollandia	39.81	2021MPB-48-1_Pág 50
37	1594	Danjon	116.02	2021MPB-48-1_Pág 50
38	3519	Ambiorix	5.78	2021MPB-48-1_Pág 50
39	52768	1998 OR2	4.01	2021MPB-48-1_Pág 50

40	424	Gratia	40.106	2021MPB-48-2
41	579	Sidonia	16.279	2021MPB-48-2
42	589	Croatia	24.972	2021MPB-48-3
43	693	Zerbinetta	11.474	2021MPB-48-2
44	791	Ani	11.159	2021MPB-48-2
45	824	Anastasia	250.845	2021MPB-48-2
46	858	El Djézair	33.525	2021MPB-48-2
47	1024	Hale	106.047	2021MPB-48-2
48	1271	Isergina	7.599	2021MPB-48-2
49	1663	van den Bos	767.148	2021MPB-48-2
50	739	Mandeville	35.842	Próxima publicación
51	357	Ninina	35.982	Próxima publicación

TRABAJOS TERMINADOS

10 asteroides con periodos menores a 6 horas

1	2699	Kalinin	2.93	2011MPB-38-2_Pág 102
2	1996	Adams	3.31	2011MPB-38-2_Pág 102
3	918	Itha	3.47	2012MPB-39-1_Pág 1
4	52768	1998 OR2	4.01	2021MPB-48-1_Pág 50
5	2055	Dvorak	4.41	2014MPB-41-1_Pág 17
6	584	Semiramis	5.07	2021MPB-48-1_Pág 50
7	3519	Ambiorix	5.78	2021MPB-48-1_Pág 50
8	749	Malsovia	5.93	2020MPB-47-3_Pág 188
9	994	Otthild	5.95	2021MPB-48-1_Pág 50
10	8059	Deliyannis	6.00	2014MPB-41-1_Pág 17

17 asteroides con periodos entre 6 y 12 horas

11	952	Caia	7.50	2020MPB-47-4_Pág 337
12	1145	Robelmonte	7.58	2020MPB-47-4_Pág 337
13	504	Cora	7.59	2020MPB-47-3_Pág 188
14	1271	Isergina	7.599	2021MPB-48-2
15	925	Alphonsina	7.88	2020MPB-47-3_Pág 188
16	261	Prymno	8.00	2021MPB-48-1_Pág 50
17	372	Palma	8.58	2020MPB-47-3_Pág 188
18	469	Argentina	8.79	2021MPB-48-1_Pág 50
19	936	Kunigunde	8.83	2021MPB-48-1_Pág 50
20	414	Liriope	11.01	2020MPB-47-4_Pág 337
21	791	Ani	11.159	2021MPB-48-2
22	179	Klytaemnestra	11.17	2020MPB-47-3_Pág 188
23	1015	Christa	11.23	2020MPB-47-3_Pág 188
24	2008	Konstitutsiya	11.27	2012MPB-39-1_Pág 1
25	693	Zerbinetta	11.474	2021MPB-48-2
26	1157	Arabia	11.55	2021MPB-48-1_Pág 50
27	188	Menippe	11.98	2021MPB-48-1_Pág 50

12 asteroides con periodos entre 12 y 24 horas

28	236	Honoría	12.34	2021MPB-48-1_Pág 50
29	1794	Finsen	12.35	2020MPB-47-3_Pág 188
30	270	Anahita	15.07	2021MPB-48-1_Pág 50
31	921	Jovita	15.57	2021MPB-48-1_Pág 50
32	1874	Kacivelia	15.95	2014MPB-41-1_Pág 17
33	579	Sidonia	16.279	2021MPB-48-2
34	949	Hel	16.43	2020MPB-47-4_Pág 337
35	191	Kolga	17.59	2021MPB-48-1_Pág 50
36	1086	Nata	18.05	2020MPB-47-3_Pág 188
37	530	Turandot	19.94	2021MPB-48-1_Pág 50
38	2185	Guangdong	21.09	2014MPB-41-1_Pág 17
39	739	Mandeville	23.92	2020MPB-47-3_Pág 188

12 asteroides con periodos mayores a 24 horas

40	589	Croatia	24.972	2021MPB-48-3
41	57	Mnemosyne	26.12	2021MPB-48-1_Pág 50
42	1180	Rita	29.78	2021MPB-48-1_Pág 50
43	858	El Djezair	33.525	2021MPB-48-2
44	739	Mandeville	35.842	Próxima publicación
45	357	Ninina	35.982	Próxima publicación
46	1269	Rollandia	39.81	2021MPB-48-1_Pág 50
47	424	Gratia	40.106	2021MPB-48-2
48	1024	Hale	106.047	2021MPB-48-2
49	1594	Danjon	116.02	2021MPB-48-1_Pág 50
50	824	Anastasia	250.845	2021MPB-48-2
51	1663	van den Bos	767.148	2021MPB-48-2

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ASTEROID PHOTOMETRY AND LIGHTCURVE ANALYSIS AT GORA'S OBSERVATORIES

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Synodic rotation periods and amplitudes are reported for
179 Klytaemnestra, 372 Palma, 504 Cora,
739 Mandeville, 749 Malozvia, 925 Alphonsina,
1015 Christa, 1086 Nata, and 1794 Finsen.

In this paper we present the collaborative work of amateur
astronomers and undergraduate students belonging to the Argentine
group G.O.R.A. (Grupo de Observadores de Rotaciones de
Asteroides). GORA is a continuity of collaborative experience
between Argentine amateur observers initially joined under the
name of "Asociación de Observatorios Argentinos de Cuerpos
Menores" (AOACM), and dedicated to perform astrometry and
photometry of minor bodies. Since 2019 March, an increasing
number of members were incorporated to GORA to perform
asteroid observations. To validate our working methodology, we

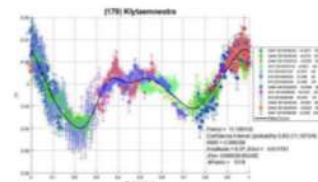
first chose asteroids with known rotation periods. We will
progressively select more complex challenges, as our learning
consolidates. The observatories and equipment used are
summarized in Table I. The results and observing circumstances
are in Table II.

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 also were
used. Differential photometry measurements were performed
using *PhotoDf* software and for the analysis we employed
Periodos software (Mazzone, 2012).

Below, we present the results for each asteroid under study. The
lightcurve figures contain the following information: 1) the
estimated period and amplitude, 2) a 95% confidence interval
regarding the period estimate, 3) RMS of the fitting, 4) estimated
amplitude and amplitude error, 5) Julian time corresponding to 0
rotation phase, and 6) the number of data points. In the reference
boxes the columns represent, respectively, the marker, observatory
MPC code, session date, session off-set, and number of data
points. (Mazzone et al., 2014).

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 i.e. with negative declinations 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.

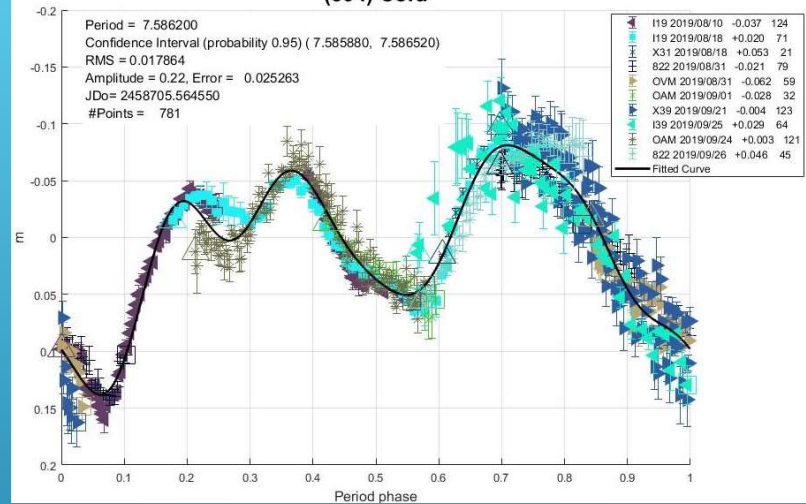
179 Klytaemnestra. This asteroid belongs to the Telemund family
and is classified as an S-type asteroid in the Tholen taxonomy.
The last reported period was of 11.17342 ± 0.00005 h (Hanuš et al.,
2016). We observed this asteroid from 2019 May 25 to August
8. The main difficulty that arose was the wealth of background
stars that made us hesitate several times to continue observing this
object. Despite this, we obtained a rotation period of
 11.168 ± 0.008 h, quite similar to that of LCDB records. The last
amplitude measurement in the databases corresponds to Ditton
and Hawkins (2007) and was of 0.55 ± 0.02 mag, whereas ours
was of 0.07 ± 0.01 mag. The difference between these values may
be an indicator of a noticeable change in the aspect angle of this
asteroid.



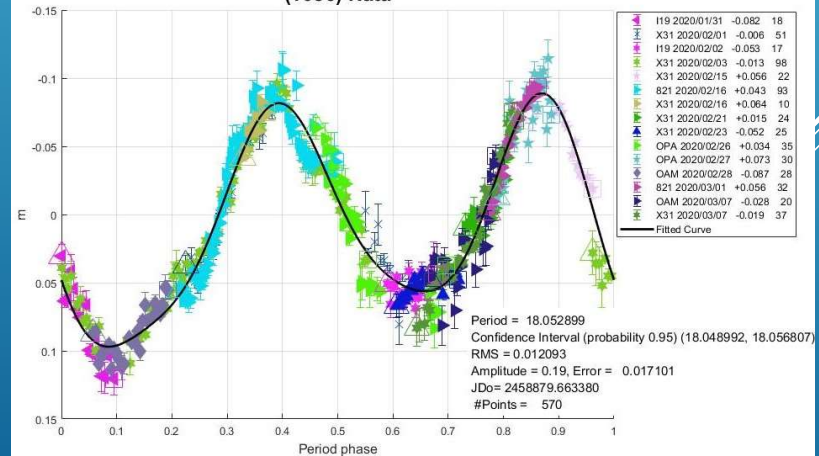
372 Palma is a B-type asteroid. The last reported period was of
 8.57964 ± 0.00005 h (Hanuš et al., 2016) and the last reported
amplitude was of 0.10 ± 0.01 mag (Behrend, 2011). This asteroid
was chosen because its brightness ($V \sim 12.6$) and declination
($\delta \sim -31^\circ$) allowed it to be observed with culminations close to
the local zenith of the observatories involved. Analysis of our data
resulted in a period of 8.582 ± 0.009 h and amplitude of $0.07 \pm$
 0.01 mag, which is in concordance with previously published data.

Minor Planet Bulletin 47 (2020)

(504) Cora



(1086) Nata



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ASTEROID PHOTOMETRY AND LIGHTCURVE ANALYSIS AT GORA'S OBSERVATORIES – PART II.

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Reconquista, Santa Fe, ARGENTINA

Observatorio de Damián Scotta (ODS)
San Carlos Centro, Santa Fe, ARGENTINA

Observatorio Punto Azul (OPA)
Villa María, Córdoba, ARGENTINA

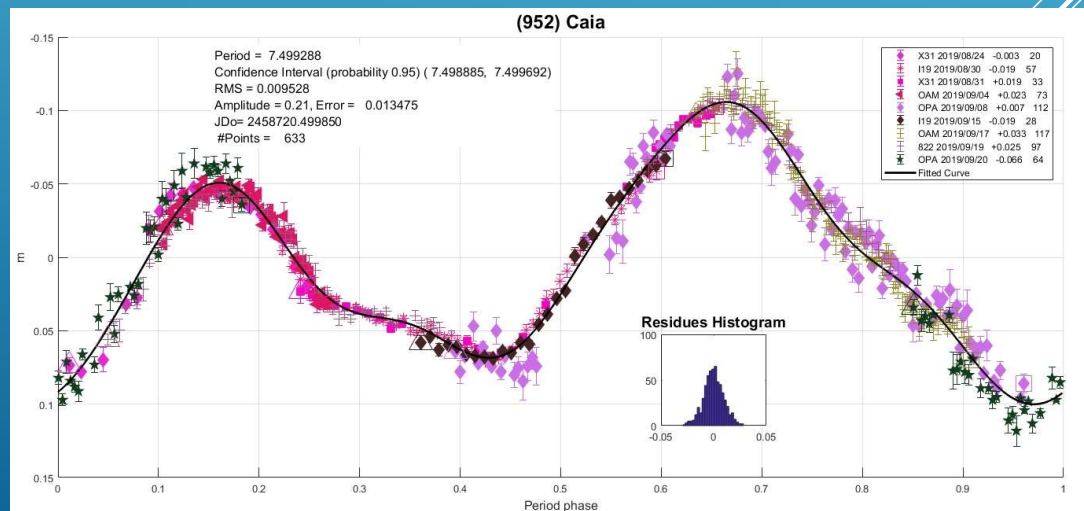
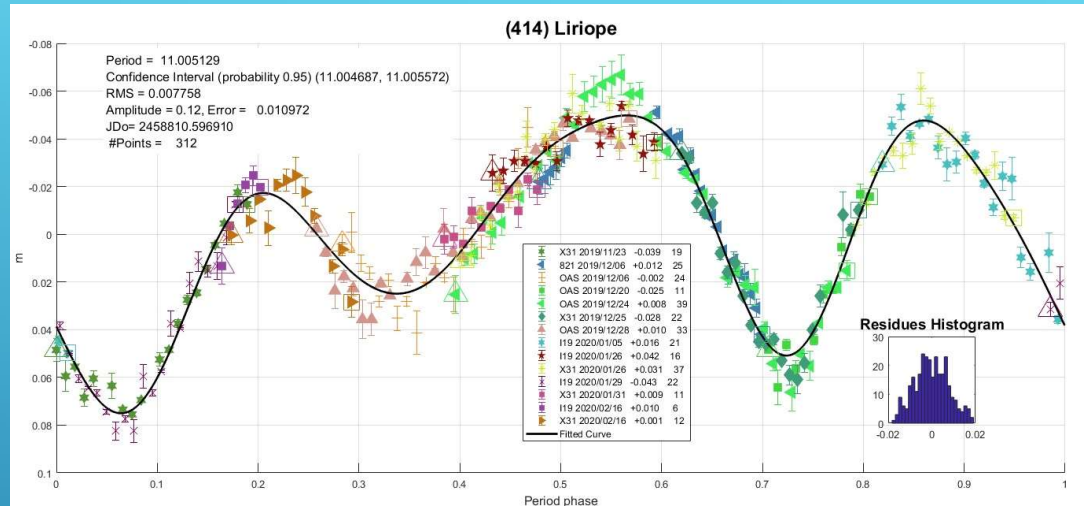
Observatorio de Raúl Melia (RMG)
Gálvez, Santa Fe, ARGENTINA

Grupo de Astronomía y Fotometría (GAF)
Córdoba Capital, Córdoba, ARGENTINA

(Received: 2020 May 22)

Synodic rotation periods and amplitudes are reported for
414 Liriope, 949 Hel, 952 Caia, and 1145 Robelmonte.

In this work, we present periods and amplitudes of lightcurves for 414 Liriope, 949 Hel, 952 Caia, and 1145 Robelmonte. These results are the product of a collaborative work by GORA (Grupo de Observadores de Rotaciones de Asteroides). In a recent publication (Colazo et al., 2020), we limited our observations to asteroids with well-defined periods, as part of a preliminary learning. Now, we have focused the study on more complex objectives, which allowed us to provide novel data of scientific relevance. The observatories and equipment used are listed in Table I.



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ASTEROID PHOTOMETRY AND LIGHTCURVE ANALYSIS AT GORA OBSERVATORIES

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Suligoy, Patricio Tourne Passarino, Mateo Borello, Rafael Farfán,
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Grupo de Observación de Asteroides (GOAS), ESPAÑA
Comisión Nacional de Investigación y Desarrollo Aeroespacial del
Perú (CONIDA), PERÚ

Grupo de Astrometría y Fotometría (GAF), ARGENTINA

Estación Astrofísica Bosque Alegre (MPC 821)
Bosque Alegre (Córdoba- ARGENTINA)

Observatorio Astronómico El Gato Gris (MPC 119)
Tanti (Córdoba-Argentina)

Observatorio Cruz del Sur (MPC 139)
San Justo (Buenos Aires- ARGENTINA)

Observatorio Orbis Tertius (MPC X14)
Córdoba (Córdoba- ARGENTINA)

Observatorio de Sencelles (MPC K14)
Sencelles (Mallorca-Islas Baleares-ESPAÑA)

Observatorio Galileo Galilei (MPC X31)
Oro Verde (Entre Ríos- ARGENTINA)

Observatorio Antares (MPC X39)
Pilar (Buenos Aires- ARGENTINA)

Observatorio AstroPilar (GORA APB)
Pilar (Buenos Aires- ARGENTINA)

Observatorio de Aldo Mottino (GORA OAM)
Rosario (Santa Fe- ARGENTINA)

Observatorio Astro Pulver (GORA OAP)
Rosario (Santa Fe- ARGENTINA)

Observatorio de Ariel Stechina 1 (GORA OAS)
Reconquista (Santa Fe- ARGENTINA)

Observatorio de Ariel Stechina 2 (GORA OA2)
Reconquista (Santa Fe- ARGENTINA)

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

Observatorio Astronómico de Moquegua 1 (GORA OMP)
(MPC W73), Cambrune (Moquegua- PERU)

Observatorio Municipal de Reconquista (GORA OMR)
Reconquista (Santa Fe- ARGENTINA)

Observatorio de Raúl Melia (GORA RMG)
Gálvez (Santa Fe-ARGENTINA)

Observatorio Uraniborg (MPC Z55)
Écija (Sevilla- ESPAÑA)

Observatorio Mazariegos (MPC Z50)
Mazariegos (Palencia- ESPAÑA)

Observatorio Nuevos Horizontes (MPC Z73)
Camas (Sevilla- ESPAÑA)

Observatorio Montcabrer (MPC 213)
Cabrils (Barcelona- ESPAÑA)

Blue Mountains Observatory (MPC Q68)
Leura NSW (Blue Mountains-AUSTRALIA)

(Received: 2020 October 4)

Synodic rotation periods and amplitudes are reported for
57 Mnemosyne, 188 Menippe, 191 Kolga, 236 Honoria,
261 Prymno, 270 Anahita, 469 Argentina, 530 Turandot,
584 Semiramis, 921 Jovita, 936 Kunigunde, 994 Orthild,
1157 Arabia, 1180 Rita, 1269 Rollandia, 1594 Danjon,
3519 Ambiorix, and (52768) 1998 OR2.

In this work, we present periods and amplitudes of lightcurves
for 57 Mnemosyne, 188 Menippe, 191 Kolga, 236 Honoria,
261 Prymno, 270 Anahita, 469 Argentina, 530 Turandot,
584 Semiramis, 921 Jovita, 936 Kunigunde, 994 Orthild,
1157 Arabia, 1180 Rita, 1269 Rollandia, 1594 Danjon,
3519 Ambiorix, and (52768) 1998 OR2.

These results are the product of a collaborative work by GORA,
(Grupo de Observadores de Rotaciones de Asteroides) group. In
previous publications (Colazo et al. 2020a; Colazo et al. 2020b)
we limited ourselves to the use of differential photometry for the
analysis of our observations. However, on this occasion, we
applied relative photometry assigning V magnitudes to the
calibration stars, especially when observing more challenging
asteroids.

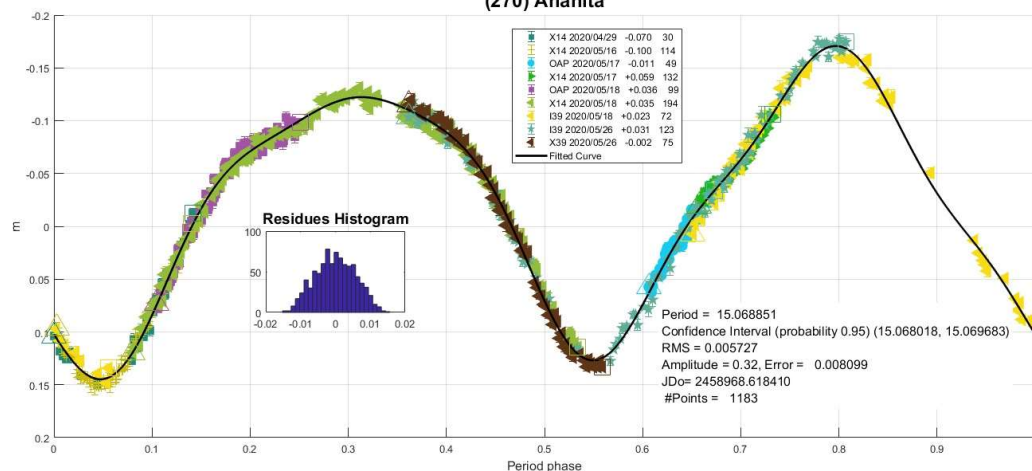
Image acquisition was performed without filters and with
exposure times of a few minutes. All images were corrected using
dark frames and, in some cases, bias and flat-field frames were
also used. Photometry measurements were performed using
FotoDif software and for the analysis we employed Periodos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

Below, we present the results for each asteroid. The lightcurve
figures contain 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 off-set, and number of data points.

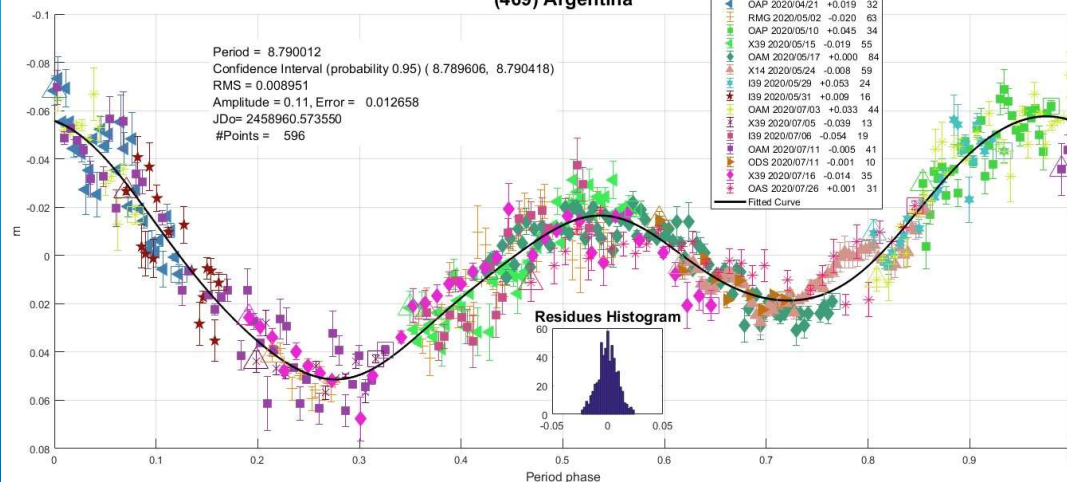
Targets were selected based on 1) those asteroids with magnitudes
accessible to the equipment of all participants, 2) those with
favorable observation conditions from Argentina i.e. with negative
declinations, and 3) objects with few periods reported in the
literature and/or with a quality code $U < 3$ in the Asteroid
Lightcurve Database (LCDB; Warner et al., 2009).

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(270) Anahita



(469) Argentina



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ASTEROID PHOTOMETRY AND LIGHTCURVE ANALYSIS AT GORA'S OBSERVATORIES, PART IV.

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Ariel Stechina, César Fornari, Néstor Suárez, Raúl Melia, Mario Morales, Ezequiel Bellocchio, Eduardo Pulver, Tiago Speranza, Damián Scotta, Aldo Wilberger, Aldo Mottino, Erick Meza, Fabricio Romero, Patricio Tourne Passarino, Matías Sulagoy, Ricardo Llanos, Andrés Chapman, Matías Martini, Carlos Colazo
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Argentina

Comisión Nacional de Investigación y Desarrollo
Aerospacial del Perú - CONIDA

Observatorio Cruz del Sur (MPC 139) -
San Justo (Buenos Aires-Argentina)

Observatorio de Senelles (MPC K14) -
Senelles (Mallorca-Islas Baleares-España)

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

Observatorio Galileo Galilei (MPC X31) -
Oro Verde (Entre Ríos-Argentina)

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

Observatorio Astronómico de Moquegua 1 (MPC W73) -
Cambrune (Moquegua-Perú)

Observatorio AstroPilar (GORA APB) -
Pilar (Buenos Aires-Argentina)

Observatorio Astronómico Calchaquí (GORA OAC) -
El Bañado (Tucumán-Argentina)

Observatorio de Aldo Mottino (GORA OAM) -
Rosario (Santa Fe-Argentina)

Observatorio Astro Pulver (GORA OAP) -
Rosario (Santa Fe-Argentina)

Observatorio de Ariel Stechina 1 (GORA OAS) -
Reconquista (Santa Fe-Argentina)

Observatorio de Damián Scotta 2 (GORA OD2) -
San Carlos Centro (Santa Fe-Argentina)

Observatorio Astronómico Municipal Reconquista (GORA OMR) -
Reconquista (Santa Fe-Argentina)

Observatorio de Raúl Melia (GORA RMG) -
Galvez (Santa Fe-Argentina)

Observatorio Astronómico Aficionado Omega (GORA OAO) -
Córdoba (Córdoba-Argentina)

(Received: 2020 Dec 30)

Synodic rotation periods and amplitudes are reported for: 424 Gratia, 579 Sidonia, 589 Croatia, 693 Zerbina, 791 Ani, 824 Anastasia, 858 El Djazair, 1024 Hale, 1271 Isergina, 1663 van den Bos.

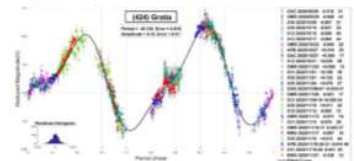
The periods and amplitudes of asteroid light curves currently presented are the product of a collaborative work by GORA (Grupo de Observadores de Rotaciones de Asteroides) group. In all the studies we have applied relative photometry assigning V magnitudes to the calibration stars.

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 were also used. Photometry measurements were performed using *FotoDif* software and for the analysis we employed *Periodos* software (Mazzoni, 2012).

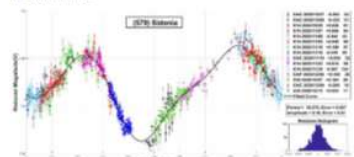
Below, we present the results for each asteroid under study. The lightcurve figures contain the following information: the estimated period and period error and the estimated amplitude and amplitude error. In the reference boxes the columns represent, respectively, the marker, observatory MPC code or - failing that - the GORA internal code, session date, session off-set, and number of 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 i.e. with negative declinations δ 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.

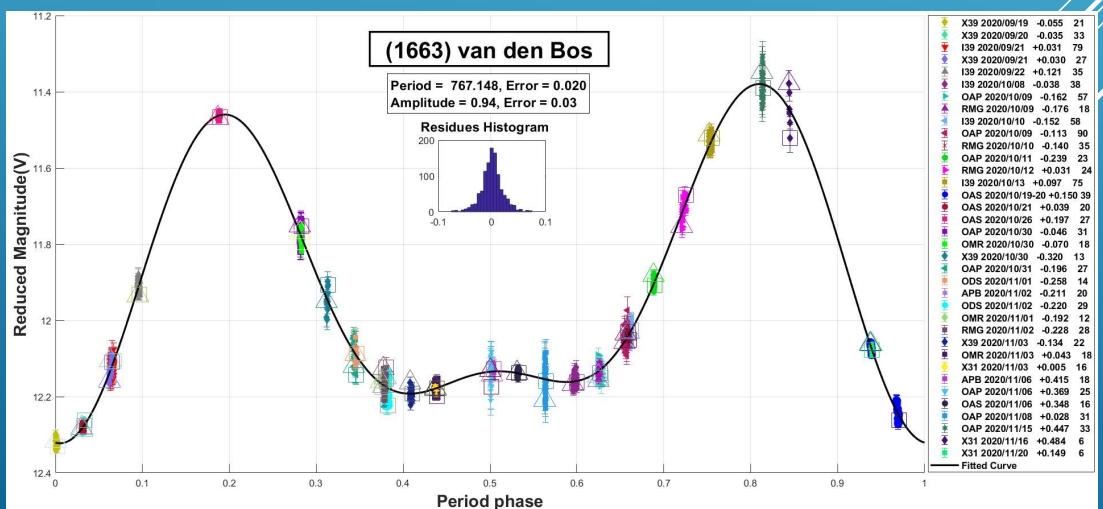
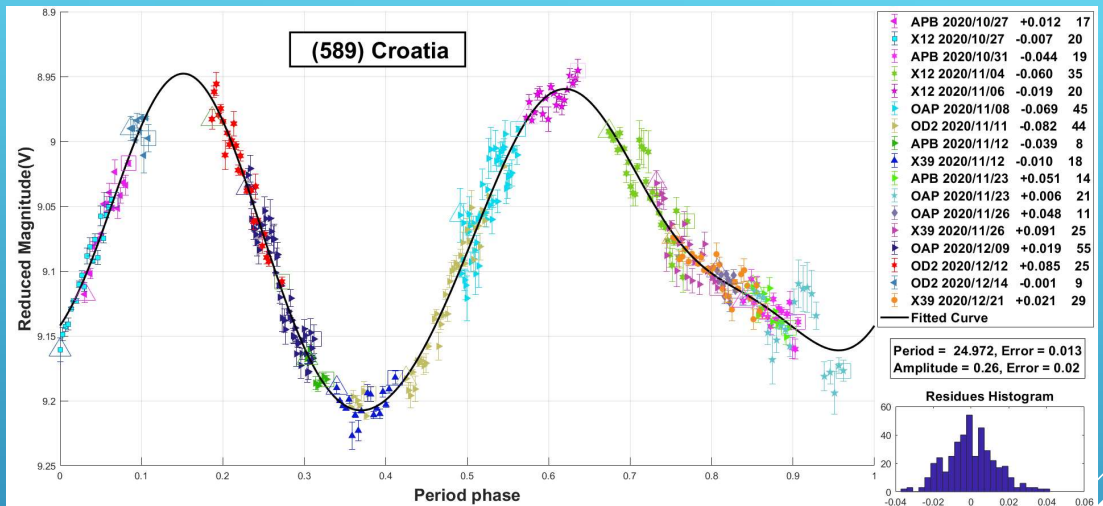
424 Gratia. This asteroid belongs to the main belt and was discovered in 1896 by Auguste Charlois. We found only one period in the literature, published by Florczak et al. (1997): $P = 19.47 \pm 0.01$ h with $\Delta m = 0.32 \pm 0.02$ mag. Our result of $P = 40.106 \pm 0.010$ h clearly indicates a longer period, whereas our measured amplitude is significantly lower: $\Delta m = 0.18 \pm 0.01$ mag. We consider this latter difference to be consequence of a change in the aspect angle.



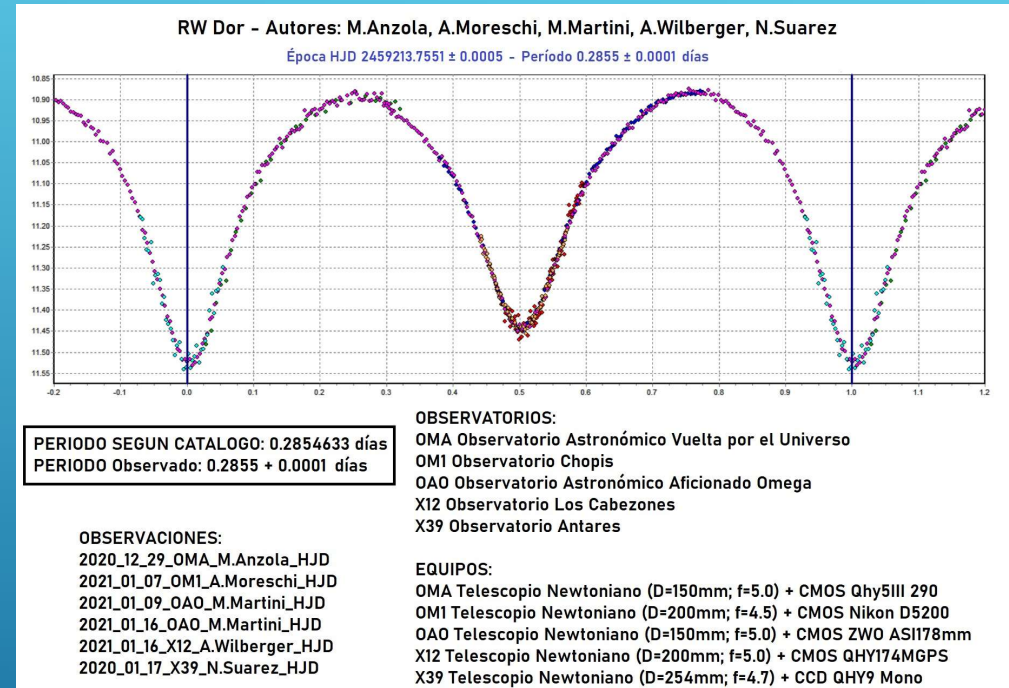
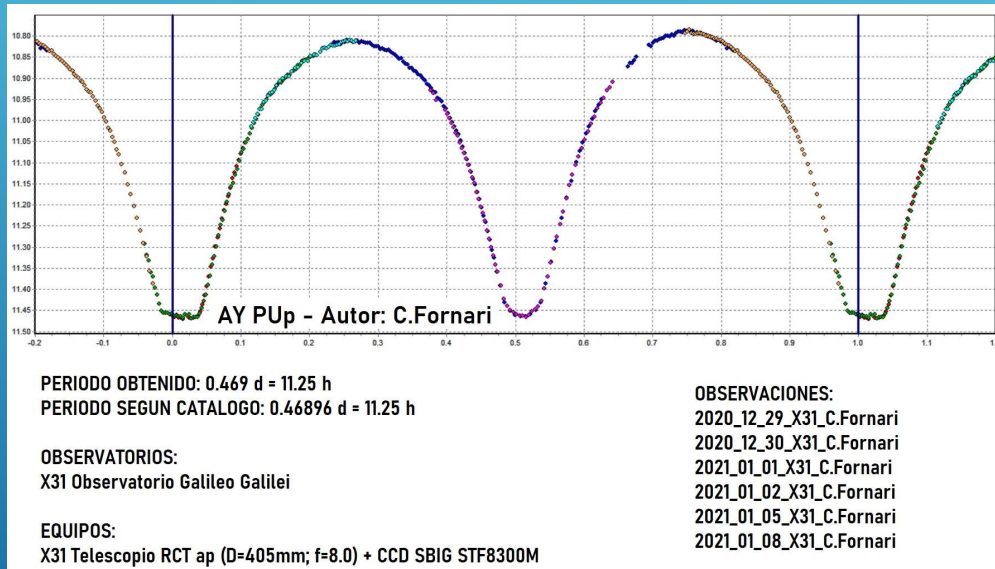
579 Sidonia. Sidonia is a bright S-type asteroid discovered in 1905 by August Kopff. The periods published for this asteroid are: $P = 13.00$ h (Tedesco, 1979), $P = 18.72$ h (Behrend, 2005web) and $P = 16.286 \pm 0.001$ h (Stephens, 2010a). We have determined a period of $P = 16.279 \pm 0.007$ h with an amplitude of $\Delta m = 0.10 \pm 0.01$ mag. Our result on the period agrees with that published by Stephens, which is the most recent we found in the literature.



Minor Planet Bulletin xx (xxxx)

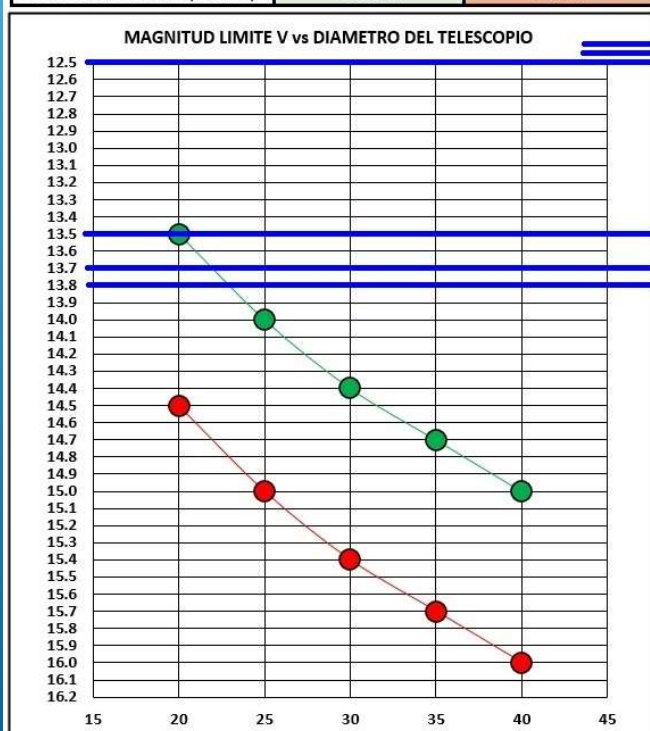


DIAGRAMAS DE FASES TERMINADOS DE BINARIAS ECLIPSANTES



TRABAJOS EN PROCESO

Magnitudes límites	teóricas	de prueba
Tiempo de exposición	2 min	4 min o +
Luna (moderada y a > 60°)	CON	SIN
Humedad o Nubes (tenues)	CON	SIN



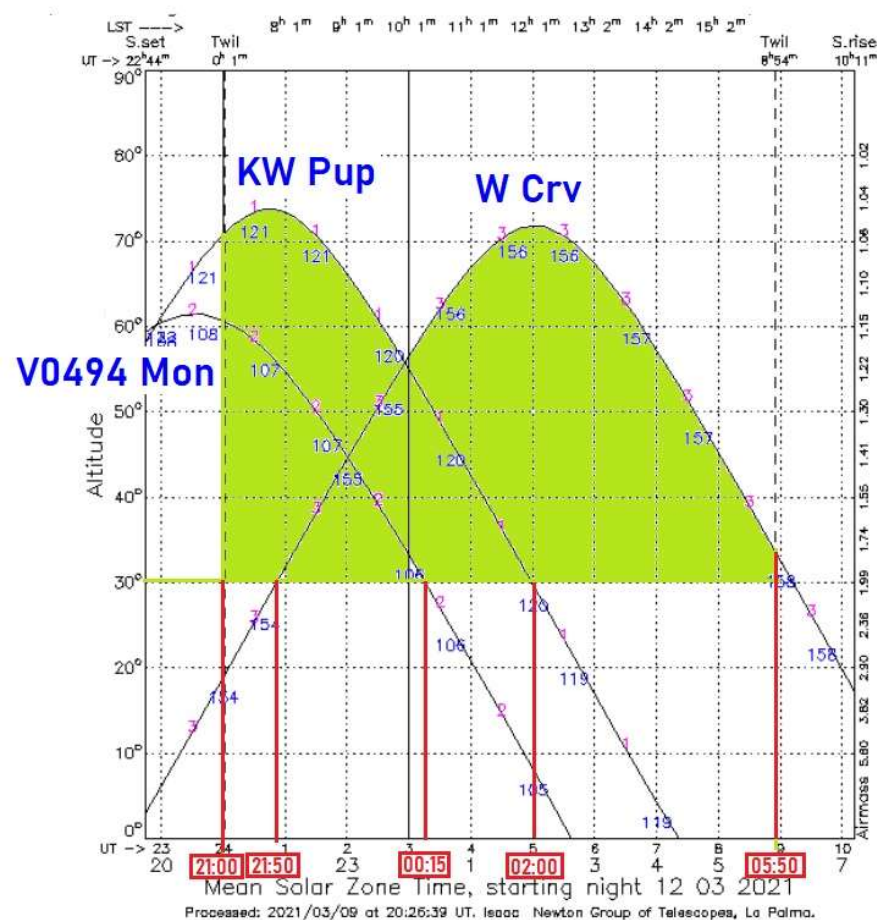
OBJETIVOS GORA+POEVE MARZO 2021

ESTRELLAS VARIABLES - ECLIPSES

TL-Argentina	UT	V	Obj.	Alt.
	h m			
KW Pup	0000		+70	
21:00a02:00	0040	11.8	+73	
	0500		+30	
V0494 Mon	0000		+60	
21:00a01:20	0000	12.2	+60	
	0420		+30	
W Crv	0050		+30	
21:50a05:50	0500	12.5	+72	
	0850		+33	

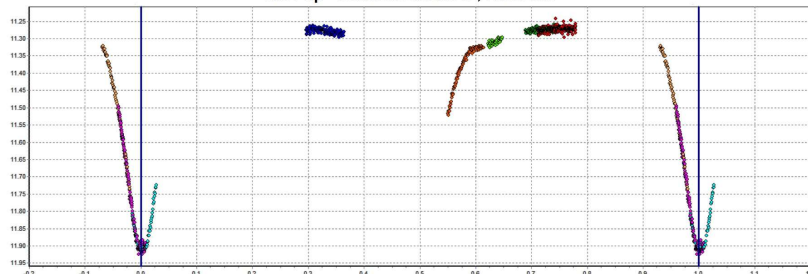
ASTEROIDES - ROTACIONES

TL-Arg	UT	V	Obj.	Alt.
	h m			
(366) Vincentina	0110		+29	
22:10a05:30	0500	13.5	+60	
	0830		+31	
(153) Hilda	2350		+35	
20:50a03:20	0240	13.7	+55	
	0620		+29	
(709) Fringilla	0020		+30	
21:20a05:00	0410	13.8	+63	
	0800		+30	



BIENARIAS ECLIPSANTES EN PROCESO

KW Pup - Autores: N.Suarez, M.Anzola



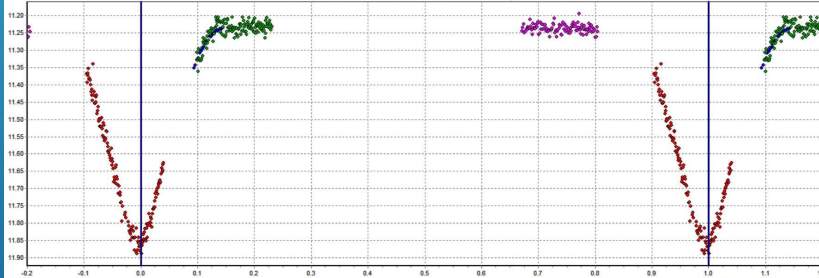
PERIODO DE CATALOGO: 1.6039075 d = 38.49378 h
PERIODO CANDIDATO: 1.6039 d = 38.59 h

OBSERVATORIOS:
X39 Observatorio Antares
OMA Observatorio Astronómico Vuelta por el Universo

EQUIPOS:
X39 Telescopio Newtoniano (D=254mm; f=4.7) + CCD QHY9 Mono
OMA Telescopio Newtoniano (D=150mm; f=5.0) + CMOS Qhy5III 290

OBSERVACIONES:
2021_02_04_X39_N.Suarez
2021_02_04_OMA_M.Anzola
2021_02_05_X39_N.Suarez
2021_02_06_OMA_M.Anzola
2021_02_06_X39_N.Suarez
2021_02_07_X39_N-Suarez

V0494 Mon - Autores: N.Suarez, C.Fornari



PERIODO S/CATALOGO: 0.8388177 d = 20.1316 h

PERIODO CANDIDATO: 0.839 d = 20.14 h

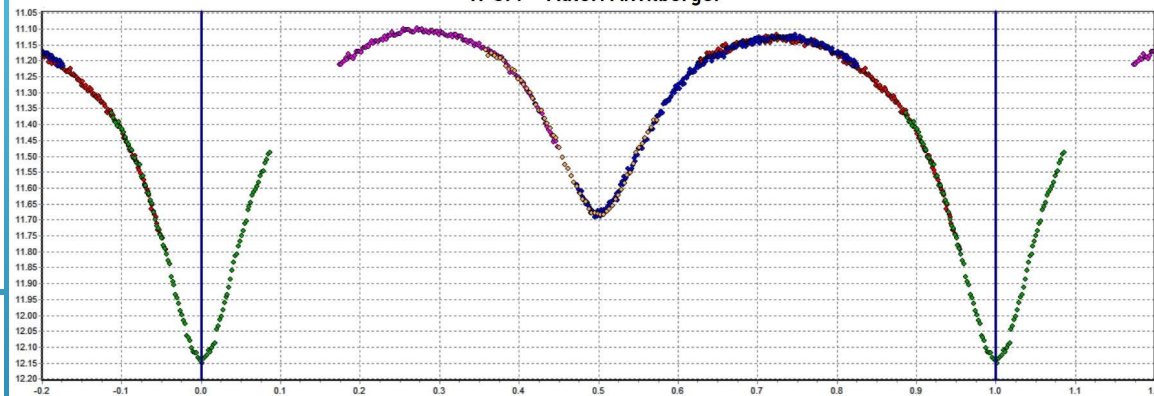
OBSERVATORIOS:
X39 Observatorio Antares
X31 Observatorio Galileo Galilei

EQUIPOS:
X39 Telescopio Newtoniano (D=254mm; f=4.7) + CCD QHY9 Mono
X31 Telescopio RCT ap (D=405mm; f=8.0) + CCD SBIG STF8300M

EFEMERIDES

FECHA * TL-ARG * FASE * NOCHE
30/01/2021 21:50 0.225 SABADO
30/01/2021 23:00 0.300 SABADO
30/01/2021 01:00 0.400 SABADO
31/01/2021 22:00 0.500 DOMINGO
31/01/2021 01:00 0.600 DOMINGO
01/02/2021 01:10 0.800 LUNES
03/02/2021 22:10 0.030 MIERCOLES
04/02/2021 22:10 0.225 JUEVES
04/02/2021 23:50 0.300 JUEVES
05/02/2021 21:50 0.400 VIERNES
05/02/2021 21:50 0.500 VIERNES
04/02/2021 22:00 0.600 SABADO
07/02/2021 22:10 0.800 DOMINGO
08/02/2021 23:00 0.030 LUNES
09/02/2021 23:00 0.225 MARTES
09/02/2021 00:30 0.300 MARTES
10/02/2021 22:40 0.400 MIERCOLES
10/02/2021 00:40 0.500 MIERCOLES

W Crv - Autor: A.Wilberger



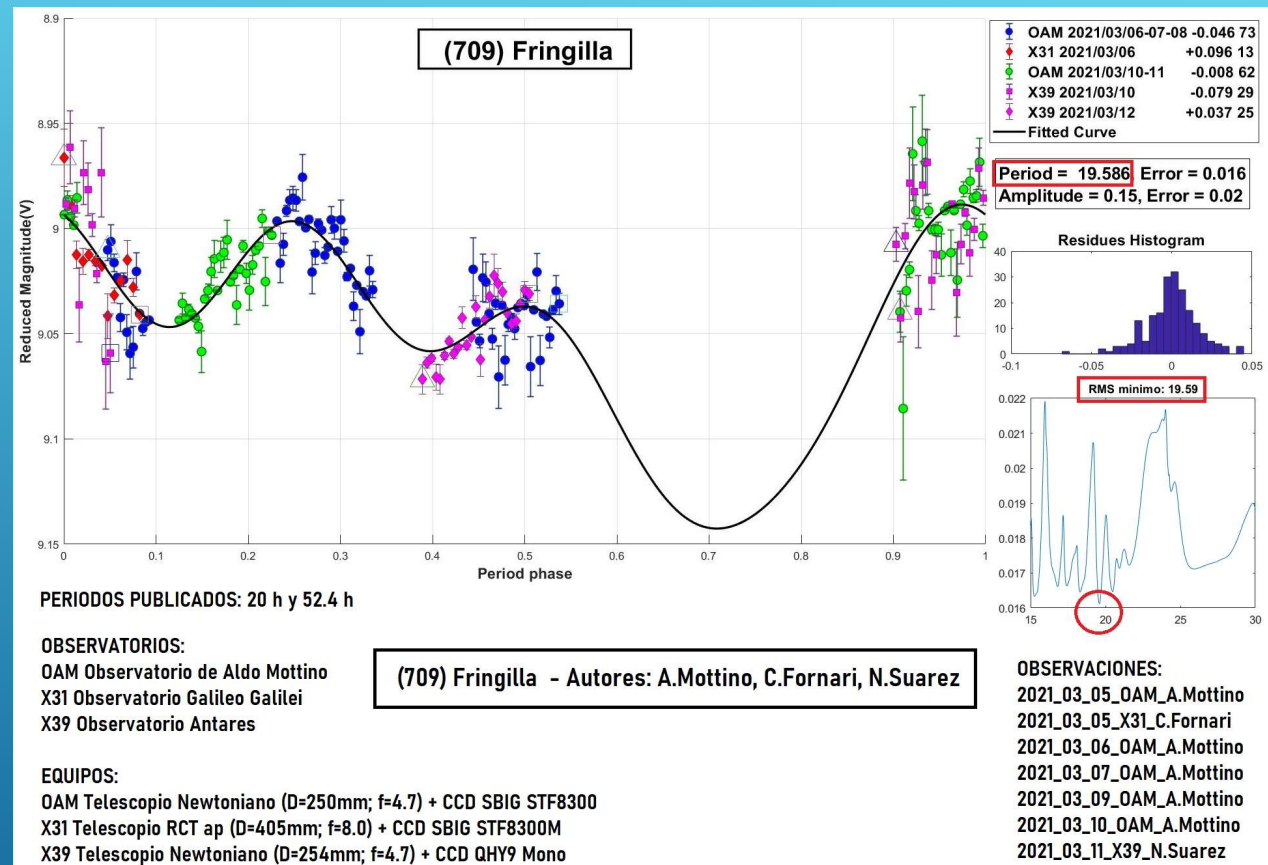
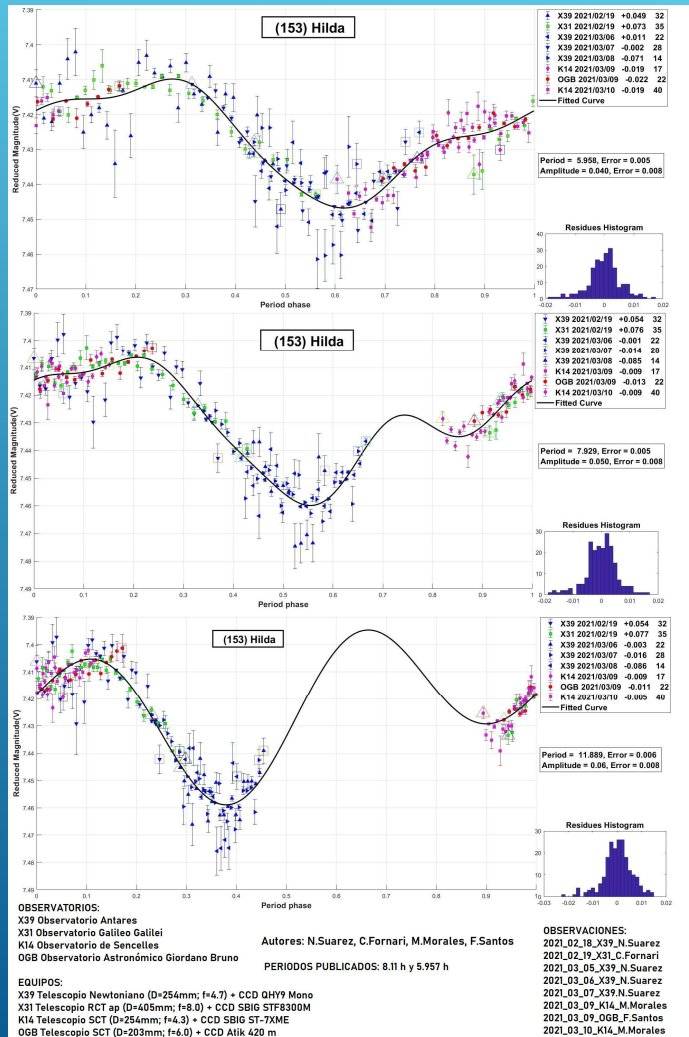
PERIODO SEGUN CATALOGO: 0.38808083 d = 9.31394 h
PERIODO CANDIDATO: 0.3881 +- 0.0002 d = 9.314 +- 0.005 h

OBSERVATORIOS:
X12 Observatorio Los Cabezones

EQUIPOS:
X12 Telescopio Newtoniano (D=200mm; f=5.0) + CMOS QHY174MGPS

OBSERVACIONES:
2021_01_19_X12_A.Wilberger
2021_02_05_X12_A.Wilberger
2021_02_06_X12_A.Wilberger
2021_02_23_X12_A.Wilberger
2021_03_11_X12_A.Wilberger

ROTACIONES DE ASTEROIDES EN PROCESO





GORA

Grupo de Observadores de Rotaciones de Asteroides

V JORNADAS GORA-POEVE

Viernes 12 de marzo de 2021 - 20:00 horas

Reunión virtual

TEMARIO

- 1 Rotación de asteroides - Evaluación del proyecto GORA**
- 2 Binarias eclipsantes - Evaluación del proyecto POEVE**
- 3 Ocultaciones Asteroidales - Proyecto POCROA**
- 4 Tránsitos de Exoplanetas - Proyecto POTE**
- 5 Plan de trabajo para 2021**



GORA – 12 – MARZO – 2021