

PHOTOMETRIC OBSERVATIONS OF
755 QUINTILLA AND 1132 HOLLANDIA

Michael Fauerbach
Florida Gulf Coast University
and SARA Observatories
10501 FGCU Blvd.
Ft. Myers, FL 33965-6565
mfauerba@fgcu.edu

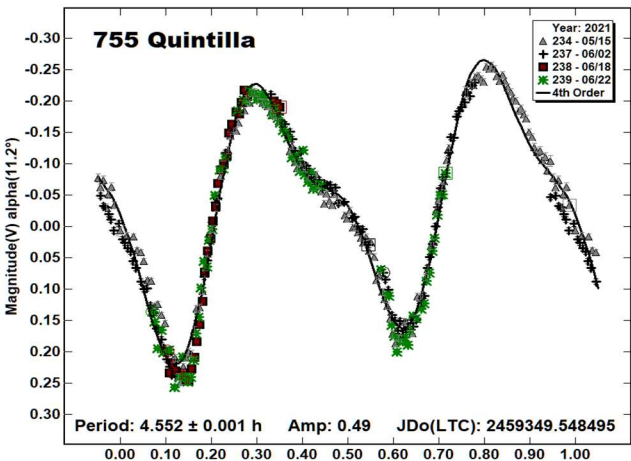
Matthew Fauerbach
NYU
Tandon School of Engineering
6 MetroTech Center
Brooklyn, NY 11201

(Received: 2021 July 13)

Photometric observations of 755 Quintilla and 1132 Hollandia were obtained on four nights 2021 May 15 to 2021 June 21. The following rotational periods were determined: 755 Quintilla: 4.552 ± 0.001 h; 1132 Hollandia: 5.322 ± 0.001 h.

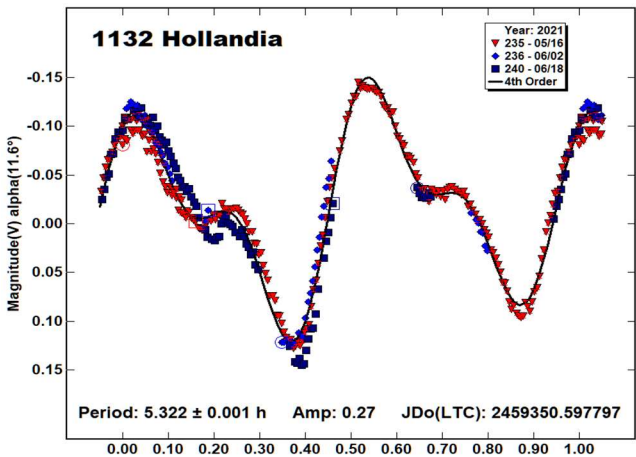
Photometric observations obtained with the 0.6m telescope of the Southeastern Association for Research in Astronomy (SARA) consortium at Cerro Tololo Inter-American Observatory are reported. The telescope is coupled with an Andor iKon-L series CCD. A detailed description of the instrumentation and setup can be found in the paper by Keel et al. (2017). The data were calibrated using *MaximDL* and photometric analysis was performed using *MPO Canopus* (Warner, 2017). Both asteroids were observed by FGCU’s Asteroid Research Group previously and are shape modelling targets of our group.

755 Quintilla. A preliminary shape model was published by Franco et al. (2020b). Large uncertainties in the pole position made the need for additional data obvious. Since the apparition of 2021 was a favorable one, it was decided to focus our spring 2021 observation campaign on 755 Quintilla. Results from our observations before opposition are reported in an accompanying paper (Fauerbach, 2021).



Opposition for 755 Quintilla was on 2021 April 18. We were able to observe the asteroid at large phase angles on each of our four nights allocated during the 2021 May-June timeframe. Our analysis yields a rotational period of 4.552 ± 0.001 h with an amplitude of 0.49 mag. This is in excellent agreement with previous publications by Behrend (2004web; 2005web), Buchheim and Prey (2005), Durech et al. (2020), Franco et al. (2020a), as well as our previous result (Fauerbach and Fauerbach, 2019). It should be pointed out that the amplitude reported here is larger than that in the accompanying paper. It appears that the minima of the lightcurve are significantly deeper at the larger phase angles.

1132 Hollandia. This main-belt asteroid was observed by our group during two previous oppositions and is one of our shape modelling targets. Our analysis yields a rotational period of 5.322 ± 0.001 h with an amplitude of 0.27 mag. This is not in agreement with Behrend (2003web; 5.586 h), but is in excellent agreement with previous publications by Sauppe et al. (2007; 5.326 h) and Clark (2015; 5.360 h), as well as our previous results (Fauerbach and Brown, 2018; 5.312 h) and Fauerbach (2020; 5.322 h).



References

Behrend, R. (2003web, 2004web, 2005web). Observatoire de Geneve web site. http://obswww.unige.ch/~behrend/page_cou.html

Buchheim, R.K.; Pray, D. (2005). “Lightcurve of 755 Quintilla.” *Minor Planet Bulletin* **32**, 1.

Clark, M. (2015). “Asteroid Photometry from the Preston Gott Observatory.” *Minor Planet Bulletin* **42**, 15-20.

Đurech, J.; Tonry, J.; Erasmus, N.; Denneau, L.; Heinze, A.N.; Flewelling, H.; Vančo, R. (2020). “Asteroid models reconstructed from ATLAS photometry.” *Astronomy & Astrophysics*, **643**, A59.

Fauerbach, M. (2020). “Measured Lightcurves and Rotational Periods of 1132 Hollandia and 1184 Gaea.” *Minor Planet Bulletin* **47**, 343-344.

Number	Name	yyyy mm/dd	Phase	L _{PAB}	B _{PAB}	Period(h)	P.E.	Amp	A.E.
755	Quintilla	2021 05/15,06/21	11.1,19.9	210	3	4.552	0.001	0.49	0.03
1132	Hollandia	2021 05/16,06/18	3.2,16.1	239	-6	5.322	0.001	0.27	0.02

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).

Fauerbach, M. (2021). "Rotational Period and Lightcurve Determination of 755 Quintilla, 2699 Kalinin, 3523 Arina, 5182 Bray, 5401 Minamioda, 5405 Neverland, (7288) 1991 FE1, and 18418 Ujibe." *Minor Planet Bulletin* **48**, 386-389.

Fauerbach, M.; Brown, A. (2018). "Lightcurve Analysis of Minor Planets 1132 Hollandia, 1184 Gaea 1322 Copernicus, 1551 Argelander, and 3230 Vampirov." *Minor Planet Bulletin* **45**, 240-241.

Fauerbach, M.; Fauerbach, M. (2019). "Rotational Period Determination for Asteroids 755 Quintilla, 1830 Pogson, 5076 Lebedev-Kumach, and (29153) 1998 SY2." *Minor Planet Bulletin* **46**, 138-139.

Franco, L.; Marchini, A.; Saya, L.-F.; Galli, G.; Baj, G.; Ruocco, N.; Tinelli, L.; Scarfi, G.; Aceti, P.; Banfi, M.; Bacci, P.; Maestripieri, M.; Papini, R.; Salvaggio, F.; Mortari, F.; Bachini, M.; Casalnuovo, G.B.; Chinaglia, B. (2020a). "Collaborative Asteroid Photometry from UAI: 2020 January - March." *Minor Planet Bulletin* **47**, 242-246.

Franco, L.; Buchheim, R.K.; Pray, D.; Fauerbach, M.; Mortari, F.; Casalnuovo, G.B.; Chinaglia, B.; Scarfi, G.; Papini, R.; Salvaggio, F. (2020b). "Preliminary Spin-Shape Model for 755 Quintilla." *Minor Planet Bulletin* **47**, 267-269.

Harris, A.W.; Young, J.W.; Scaltriti, F.; Zappala, V. (1984). "Lightcurves and phase relations of the asteroids 82 Alkeme and 444 Gyttis." *Icarus* **57**, 251-258.

Keel, W.C.; Oswalt, T.; Mack, P.; Henson, G.; Hillwig, T.; Batchelder, D.; Berrington, R.; De Pree, C.; Hartmann, D.; Leake, M.; Licandro, J.; Murphy, B.; Webb, J.; Wood, M.A. (2017). "The Remote Observatories of the Southeastern Association for Research in Astronomy (SARA)." *Publications of the Astronomical Society of the Pacific* **129**:015002 (12pp).
<http://iopscience.iop.org/article/10.1088/1538-3873/129/971/015002/pdf>

Sauppe, J.; Torno, S.; Lemke-Oliver, R.; Ditteon, R. (2007). "Asteroid Lightcurve Analysis at the Oakley Observatory - March/April 2007." *Minor Planet Bulletin* **34**, 119-122.

Warner, B.D. (2017). *MPO Canopus* software version 10.7.10.0. <http://www.bdwpublishing.com>

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

Milagros Colazo

Instituto de Astronomía Teórica y Experimental
(IATE-CONICET), ARGENTINA

Facultad de Matemática, Astronomía y Física,

Universidad Nacional de Córdoba, ARGENTINA

Grupo de Observadores de Rotaciones de Asteroides (GORA),
ARGENTINA

milirita.colazovinovo@gmail.com

César Fornari, Aldo Wilberger, Mario Morales,

Ezequiel Bellocchio, Eduardo Pulver, Damián Scotta,

Néstor Suárez, Raúl Melia, Francisco Santos, Aldo Mottino,

Ariel Stechina, Alberto García, Andrés Chapman, Carlos Colazo

Grupo de Observadores de Rotaciones de Asteroides (GORA),
ARGENTINA

Observatorio Cruz del Sur (MPC I39) -
San Justo (Buenos Aires-Argentina)

Observatorio de Sencelles (MPC K14) -
Sencelles (Mallorca-Islands Balears-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 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 Damián Scotta 1 (GORA ODS) -
San Carlos Centro (Santa Fe-Argentina)

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

Observatorio Astronómico Giordano Bruno (GORA OGB) -
Piconcillo (Córdoba-España)

Observatorio Río Cofio (GORA ORC) -
Robledo de Chavela (Madrid-España)

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

(Received: 2021 May 3)

Synodic rotation periods and amplitudes are reported for
153 Hilda, 357 Ninina, 366 Vincentina, 709 Fringilla, and
739 Mandeville.