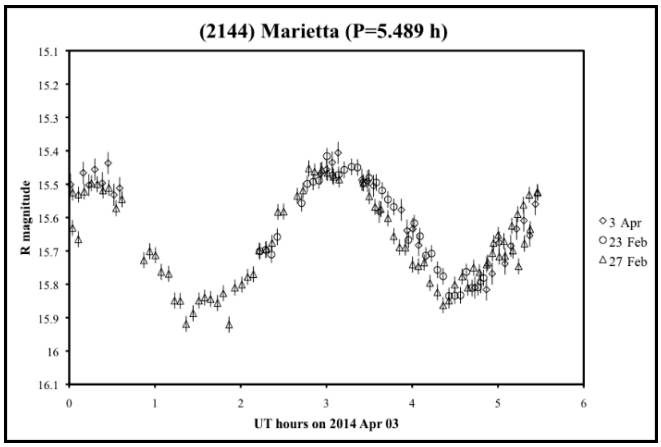

Figure 3. Composite lightcurve for (2144) Marietta. The error in the photometric calibration to the standard R magnitude scale is ±0.02.

Asteroid	UT Date	λ (PAB) (°)	β (PAB) (°)	α(°)	Observer(s)
(1443) Ruppina	23 Feb	146.8	-1.1	2.8	Slivan, Yazdi
(1443) Ruppina	26 Feb	146.8	-1.0	3.9	Slivan, Hartt
(1443) Ruppina	07 Mar	146.7	-1.0	7.1	Hartt, Thayer
(1848) Delvaux	23 Feb	163.1	-0.3	3.6	Slivan
(1848) Delvaux	07 Mar	163.0	-0.4	1.3	Arredondo, Fendrock
(1848) Delvaux	12 Mar	162.9	-0.4	3.3	Arredondo, Thayer
(2144) Marietta	23 Feb	146.7	0.4	3.9	Slivan, Yazdi
(2144) Marietta	27 Feb	147.5	0.4	5.5	Yazdi, Blancato
(2144) Marietta	03 Apr	154.5	0.8	16.4	Yazdi, Blancato

Table I. Observing Circumstances. UT dates are in year 2014. λ and β are J2000.0 ecliptic longitude and latitude of the phase angle bisector respectively, and α is the solar phase angle.

Asteroid	H	Synodic Period (h)	Amplitude (mag)
(1443) Ruppina	11.40	5.880 ± 0.001	0.27-0.34
(1848) Delvaux	11.24	3.639 ± 0.001	0.49-0.62
(2144) Marietta	11.37	5.489 ± 0.001	0.32-0.42

Table II. Lightcurve period and amplitude results. Values for H given by Slivan et al. (2008). The subjective confidence code Q as used by Lagerkvist et al. (1989) is 3 "no ambiguity" for all three periods.

PERIOD DETERMINATION FOR 398 ADMETE: THE LOWEST NUMBERED ASTEROID WITH NO PREVIOUSLY KNOWN PERIOD

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Lightcurve analysis for 398 Admete was performed using observations during its 2014 opposition. The synodic rotation period was found to be 11.208 ± 0.001 h and the lightcurve amplitude was 0.13 ± 0.02 mag.

398 Admete is a main-belt asteroid discovered in 1894 by Auguste Charlois in Nice (France). It appeared on the CALL web site as an asteroid photometry opportunity due to it reaching a favorable apparition in 2014 and having no defined lightcurve parameters.

Unfiltered CCD photometric images were taken at Observatorio Los Algarrobos, Salto, Uruguay (MPC Code I38) in 2014 from May 27 to July 7. The telescope was a 0.3-m Meade LX-200R reduced to *f*/6.9. The imager was a QSI 516wsg NABG (non-antiblooming gate) with a 1536x1024 array of 9-micron pixels and 23x16 arcminute field-of-view. The exposures increased from 120 to 210 seconds as the asteroid faded past-opposition (May 10). 2x2 binning was used, yielding an image scale of 1.77 arcseconds per pixel. The camera was set to –15° C and off-axis guided by means of an SX Lodestar camera and *PHD Guiding* (Stark Labs) software. Image acquisition was done with *MaxIm DL5* (Diffraction Limited). The computer was synchronized with atomic clock time via Internet NTP servers at the beginning of each session.

All images were dark and flat-field corrected and then measured using *MPO Canopus* (Bdw Publishing) version 10.4.3.16 with a differential photometry technique. The data were light-time corrected. Night-to-night zero point calibration was accomplished by selecting up to five comp stars with near solar colors according to recommendations by Warner (2007) and Stephens (2008). Period analysis was also done with *MPO Canopus*, which incorporates the Fourier analysis algorithm developed by Harris (Harris *et al*., 1989).

More than 85 hours of effective observation along 19 sessions and about 2,140 data points were required in order to solve the noisy and essentially flat lightcurve. Over the span of observations, the phase angle varied from 6.0º to 15.7º, the phase angle bisector ecliptic longitude from 231.0º to 230.8º to 231.9º, and the phase angle bisector ecliptic latitude from –8.4º to –6.9º. The rotation period for 398 Admete was determined to be 11.208 ± 0.001 h along with a peak-to-peak amplitude of 0.13 ± 0.02 mag. The period spectrum also showed another plausible solution at 22.4 h (twice the adopted period), although slightly mathematically worse than the chosen period. No clear evidence of tumbling or binary companion was seen in the lightcurve.

At the time of this study 398 Admete happened to be the lowest numbered asteroid for which no rotation parameters were found in the literature. For those numbered below 500, only one remains in such condition (457 Alleghenia), and from 501 to 1000, 22 still have no reported rotation period. This is a dramatic reduction from just two years ago (Alvarez, 2012). However, even in cases where

low numbered asteroids do have reported lightcurve parameters, not all of these period determinations are secure (i.e., U < 3) and ongoing investigations to verify, refine, or revise their values remains an important and pending endeavor.

Acknowledgements

Given the shallow amplitude and noisy data, the author found trouble with the proper resolution of this challenging target. Thanks to Brian D. Warner for a fruitful exchange of emails and wise advices, from which it was finally possible to shed light on this subject.

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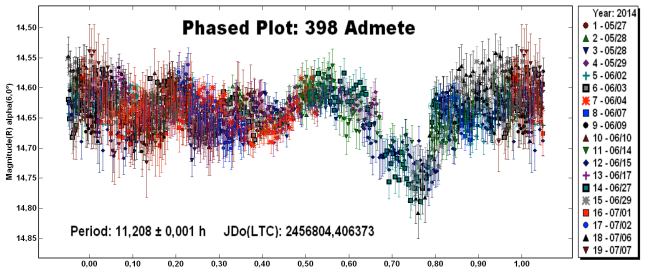

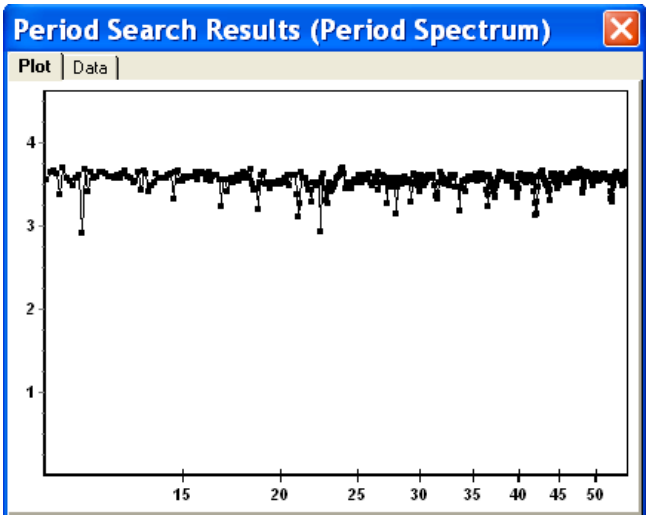

ROTATIONAL PERIOD OF ASTEROID 12282 CROMBECQ

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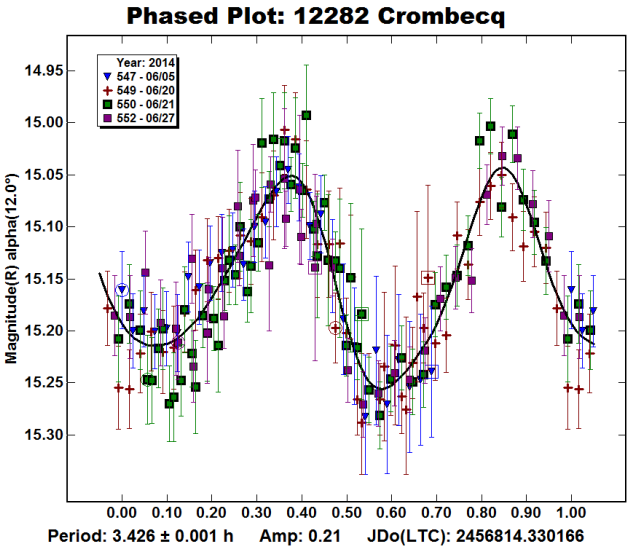
Photometric observations of main-belt asteroid 12282 Crombecq were made over four nights in 2014 June. Lightcurve analysis shows a synodic period of 3.426 ± 0.001 h with an amplitude of 0.21 ± 0.04 mag.

The main-belt asteroid 12282 Crombecq was selected from the "Potential Lightcurve Targets" web site (Warner, 2013a). Observations on four nights in 2014 June were carried out from Balzaretto Observatory (A81) in Rome, Italy, using a 0.20-m Schmidt-Cassegrain (SCT) reduced to *f*/5.5 and an SBIG ST7-XME CCD camera. All unfiltered images were calibrated with dark and flat-field frames. Differential photometry and period analysis was done using *MPO Canopus* (Warner, 2013b).

The derived synodic period was P = 3.426 ± 0.001 h with an amplitude of A = 0.21 ± 0.04 mag.



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