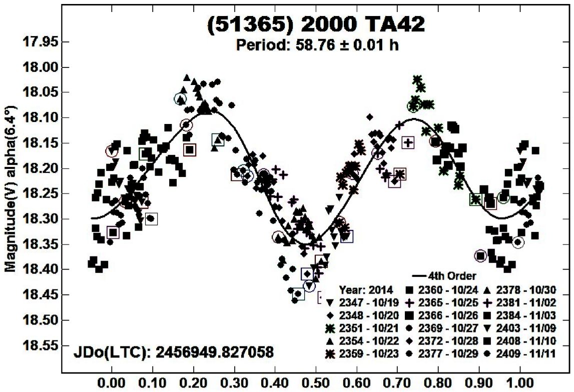

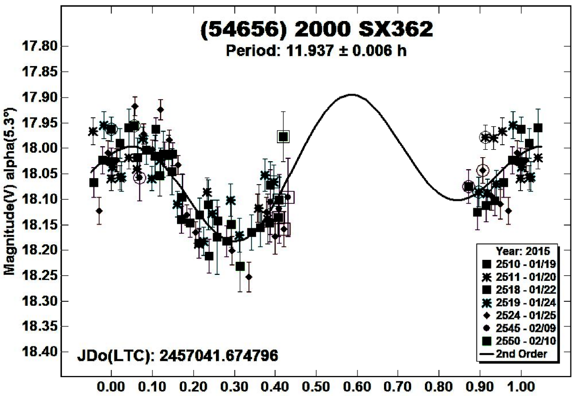

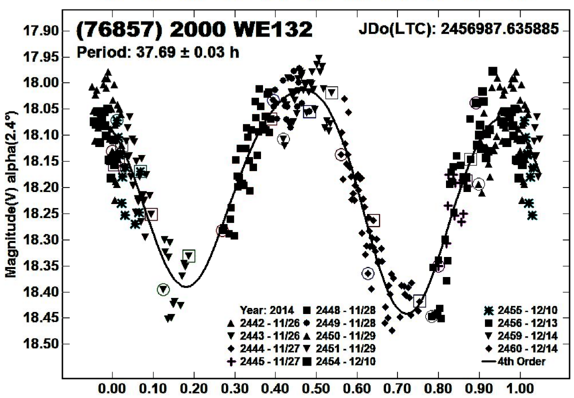

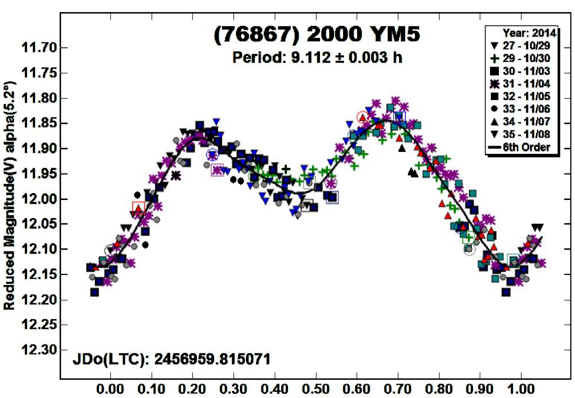

ROTATION PERIOD DETERMINATION FOR 3395 JITKA

Alessandro Marchini
Astronomical Observatory, University of Siena (K54)
Via Roma 56, 5300 – Siena, ITALY
alessandro.marchini@unisi.it

Fabio Salvaggio
21047 - Saronno, ITALY

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Analysis of photometric observations of the main-belt asteroid 3395 Jitka performed by the authors in February 2015 revealed a bimodal lightcurve with a synodic rotation period of 18.293 ± 0.006 hours as the most likely solution.

3395 Jitka (1985 UN) is a main-belt asteroid discovered on 1985 October 20 by Antonín Mrkos at Klet Observatory. It is named in honor of Jitka Beneš in recognition of her assistance at Klet during the International Halley Watch. It orbits with a semi-major axis of about 2.79 AU, eccentricity 0.06, and a period of 4.67 years. 3395 Jitka is a member of the Agnia family of asteroids, named after the asteroid 847 Agnia. This group most likely formed from the breakup of a basaltic object, which in turn was spawned from a larger parent body that underwent igneous differentiation (Milani *et al*., 2014; Sunshine *et al*., 2004). According to the WISE satellite infrared radiometry, the diameter is 10.909 ± 0.155 km based on an absolute magnitude H = 11.7 (Masiero *et al*., 2011). Bus and Binzel (2002) observed 3395 Jitka during Phase II of the Small Main Belt Asteroid Spectrographic Survey (SMASS II) and assigned a spectral classification of Sr.

A search of the asteroid lightcurve database (LCDB; Warner *et al*., 2009) indicates that our results constitute the first reported lightcurve observations and results for this object. The asteroid was reported as a lightcurve photometry opportunity in the *Minor Planet Bulletin* (Warner *et al*., 2015).

Observations at the Astronomical Observatory of the University of Siena were carried out on five nights from 2015 February 10-18. We used a 0.30-m *f*/5.6 Maksutov-Cassegrain telescope, SBIG STL-6303E NABG CCD camera, and clear filter. The pixel scale was 2.20 arcsec when binning 2x2. Exposure times were either 300 or 420 seconds.

A total of 433 data points were collected. Over the interval of about 9 days, the phase angle ranged from 2.2 degrees to 5.3 degrees after the opposition.

Images were calibrated with bias, flat, and dark frames. Data processing, including reduction to R band, and period analysis was performed using *MPO Canopus* (BDW Publishing, 2012). Differential photometry measurements were performed using the Comp Star Selector (CSS) procedure in *MPO Canopus* that allows selecting of up to five comparison stars of near solar color. Subsequently, additional adjustments of the magnitude zero-points for the particular data sets were carried out in order to achieve the best alignment among them by finding the minimum RMS value from the Fourier analysis.

The period analysis yielded several possible solutions that clearly stand out in the period spectrum (RMS vs. period; Fig. 1) with nearly comparable RMS errors. Despite the period spectrum showing possible solutions at 9.15 h (monomodal lightcurve), 18.29 h (bimodal), 27.44 h (trimodal), we concluded that the most likely value of the synodic period for 3395 Jitka is associated with the bimodal lightcurve phased to 18.293 ± 0.006 hours with an amplitude of 0.40 ± 0.03 mag (Fig. 2) because large amplitudes would be improbable for monomodal or trimodal lightcurves at lower phase angles, as explained in the *MPO Users Guide* (Warner, 2012).

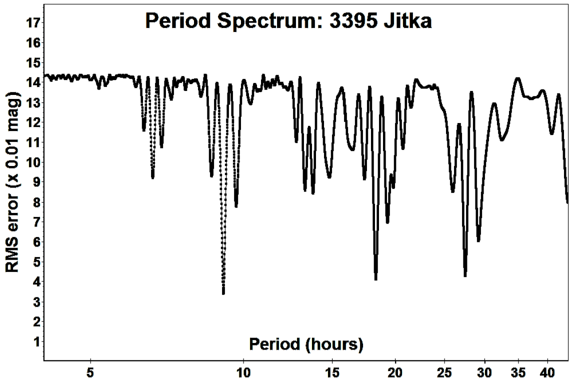

Figure 1. The period spectrum for 3395 Jitka shows several possible solutions.

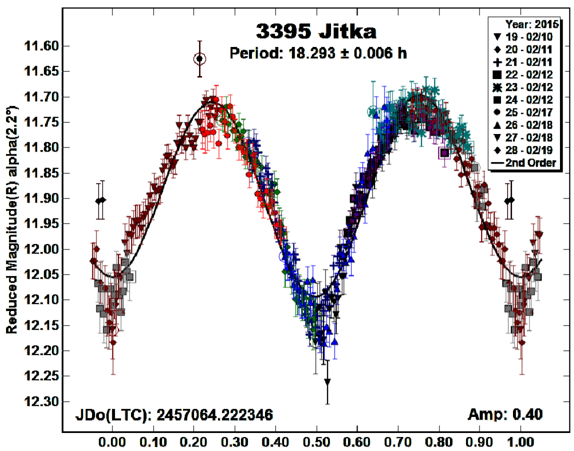

Figure 2. The lightcurve for 3395 Jitka phased to the adopted period of 18.293 h.

Acknowledgments

Some observing sessions of 3395 Jitka at the Astronomical Observatory of the University of Siena were attended by four high school students from Liceo "Galileo Galilei" (Siena): Linda Capannoli, Amal Gasmi, Leonella Filippa Saya, and Shinju Torsellini, who are involved in an interesting vocational guidance project about astronomy. The authors would like to thank Lorenzo Franco and Riccardo Papini for their support during the observations and data analysis.

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