LIGHTCURVE FOR (152756) 1999 JV3

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(Received: 25 June)

CCD photometric observations of the Apollo asteroid (152756) 1999 JV3 were obtained from Lowell Observatory in May 2013. A synodic period of 2.845 ± 0.001 h with an amplitude of 0.32 ± 0.02 was found.

Observations of (152756) 1999 JV3 were requested by Lance Benner because it was a target of the radar program at Arecibo and Goldstone (private communication). No previous periods are reported in the Lightcurve Database (Warner 2012).

Observations at Lowell Observatory (MPC 688) were made using the 42-inch (1.05-m) Hall telescope. All images were unbinned and R filters were used. Data and period analysis was done using *MPO Canopus*, which incorporates the Fourier analysis algorithm (FALC) developed by Harris (Harris et al., 1989).

The phase angle over the short observing run ranged from 34 to 43 degrees and the average phase angle bisector Longitude (L_{PAB}) was 254.

Acknowledgements

French and Stephens were visiting astronomers at Lowell Observatory. This research was supported by National Science Foundation grant AST-1212115.

References

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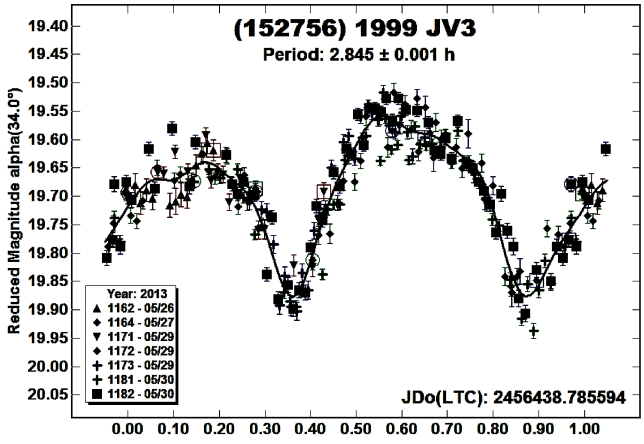
Warner, B.D. (2012). The Asteroid Lightcurve Database (LCDB) website. *http://www.minorplanet.info/lightcurvedatabase.html*.



ROTATION PERIOD DETERMINATION FOR 498 TOKIO

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(Received: 6 June)

For 498 Tokio a synodic rotation period of 41.85 ± 0.01 hours and amplitude 0.23 ± 0.02 magnitude have been found with CCD photometry.

Observations by Pilcher were made at the Organ Mesa Observatory with a Meade 35 cm LX200 GPS S-C, SBIG STL-1001E CCD, clear filter, unguided exposures, MPOSC3 and APASS calibration magnitudes. Martinez used a Celestron CPC 1100 28 cm Schmidt Cassegrain, SBIG ST8XME CCD, clear filter, differential photometry only.

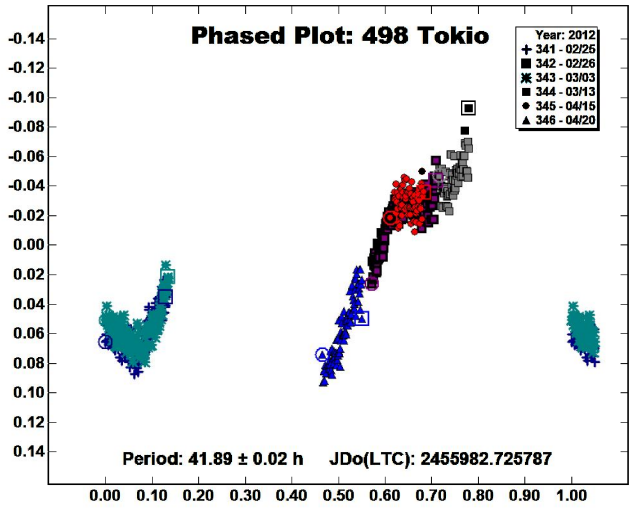
MPO Canopus software was used by both observers to measure the images photometrically, share data, adjust instrumental magnitudes up or down to produce the best fit, and prepare the lightcurves. Due to the large number of data points acquired the lightcurves have been binned in sets of three data points with a maximum of five minutes between points.

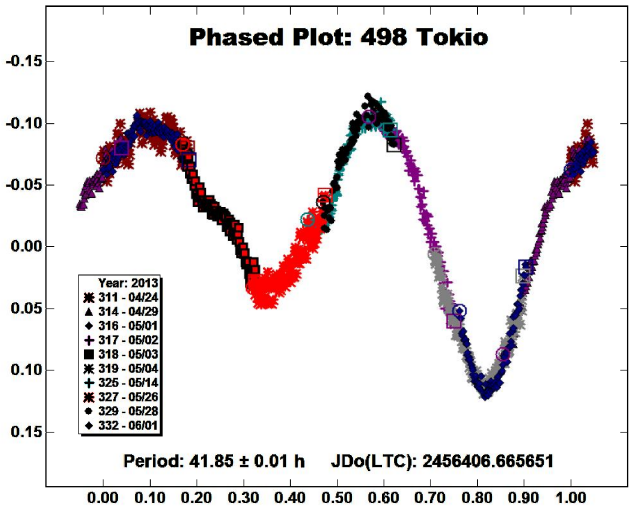
Earlier period determinations are by Gil-Hutton (1995), 30 hours; and by Behrend (2012), 24.82 hours; both based on fragmentary lightcurves. Author Martinez obtained sessions on 6 nights 2012 Feb. 25 - Apr. 20, but was unable to find a period from these data. Author Pilcher inspected these data and also was unable to find a period. At the next opposition author Pilcher obtained data on ten nights 2013 Apr. 24 - June 1. These revealed a period much longer than those for which the 2012 data were searched and provided a good fit with full phase coverage to a lightcurve phased to 41.85 ± 0.01 hours, amplitude 0.23 ± 0.02 magnitudes, and an unsymmetrical bimodal lightcurve. With this well defined period the 2012 data were reexamined. Within a trial period range from 37 to 47 hours the instrumental magnitudes were adjusted until a best fit (minimum Fourier residual) was obtained at 41.89 ± 0.02 hours with about 50% phase coverage. Although this is not a completely independent determination, its consistency with the period of 41.85 ± 0.01 hours found from the 2013 data, rather than perhaps a period up to 5 hours different, improves the confidence of the solution.

References

Behrend, R. (2012). Observatoire de Geneve web site. *http://obswww.unige.ch/~behrend/page_cou.html*

Gil-Hutton, R. (1995). "Photoelectric Photometry of Asteroids 184 Dejopeja, 498 Tokio, and 690 Wratislavia." *Rev. Mexicana Astron. Astrof.* **31**, 19-21.





ROTATIONAL PERIOD OF ASTEROID 2050 FRANCIS

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(Received: 17 June)

Photometric observations of the main-belt asteroid 2050 Francis were made over three nights during 2013 May and June. Analysis shows a synodic period of 3.069 ± 0.001 h with an amplitude 0.20 ± 0.03 mag.

The main-belt asteroid 2050 Francis was selected from the "Potential Lightcurve Targets" web site (Warner, 2012a). Observations on three nights were carried out from Balzaretto Observatory (A81) in Rome (Italy) using a 0.20-m Schmidt-Cassegrain (SCT) reduced to *f*/5.5 equipped with a SBIG ST7-XME CCD camera, and from F. Fuligni Observatory (D06), near Rome (Italy), using a 0.35-m *f*/10 Meade Advanced Coma Free (ACF) telescope and SBIG ST8-XE CCD camera with Bessel R filter. All images were calibrated with dark and flat-field frames. Differential photometry and period analysis were done using *MPO Canopus* (Warner, 2012b).

The derived synodic period was P = 3.069 ± 0.001 h (Fig.1) with an amplitude of A = 0.20 ± 0.03 mag.

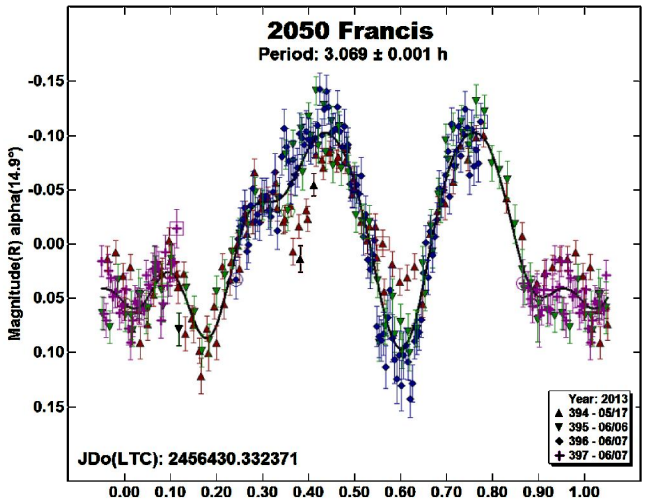

Figure 1. The lightcurve of 2050 Francis with a period of 3.069 ± 0.001 h and an amplitude of 0.20 ± 0.03 mag.

References

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