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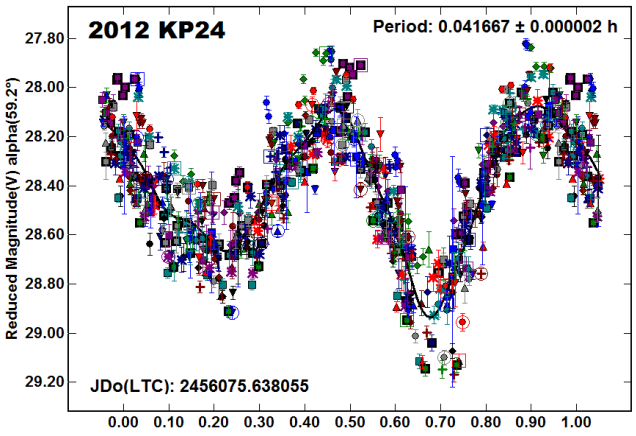

ASTEROID LIGHTCURVE ANALYSIS AT RIVERLAND DINGO OBSERVATORY: 1394 ALGOA, 1660 WOOD, 8882 SAKAETAMURA, AND (15269) 1990 XF

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(Received: July 15)

Lightcurves for four asteroids were obtained at Riverland Dingo Observatory (RDO) from 2012 January-June: 1394 Algoa, 1660 Wood, 8882 Sakaetamura, and (15269) 1990 XF.

The observations reported here were all obtained using a 0.41-m *f*/9 Ritchey-Chretien, SBIG STL-1001E CCD camera, and Johnson-Cousins V filter. All images were bias, dark and flat-field corrected. The image scale was 1.35 arc seconds per pixel. Differential photometry measurements were made in *MPO Canopus* (Warner, 2008) using V magnitudes for comparison stars extracted from the AAVSO Photometric All-Sky Survey Catalog (APASS; *http://www.aavso.org/download-apass-data*)

The four asteroids reported here were selected from the Collaborative Asteroid Lightcurve Link (CALL; Warner, 2011). A search of the Asteroid Lightcurve Database (LCDB; Warner *et al.*, 2009) did not reveal any previously reported results for asteroids 1660 Wood or (15269) 1990 XF. Previously or newly-reported results for 1394 Algoa and 8882 Sakaetamura are referenced below.

1394 Algoa is a main-belt asteroid discovered by Jackson in Johannesburg in 1936. A total of 442 data points were obtained over four nights during the period 2012 May 9-30, with average magnitude of 14.7 and average SNR of 121. The lightcurve shows a period of 2.768 ± 0.001 h and amplitude of 0.20 ± 0.01 mag. A submission by Klinglesmith (2012) on the CALL website reports a period of 2.768 ± 0.001 h and amplitude of 0.20 ± 0.05 mag.

1660 Wood is a main-belt asteroid discovered by Bruwer in Johannesburg in 1953. A total of 592 data points were obtained over seven nights during the period 2012 February 10-25, with average magnitude of 13.6 and average SNR of 225. The lightcurve shows a period of 6.8088 ± 0.0004 h and amplitude of 0.16 ± 0.01 mag.

8882 Sakaetamura is a main-belt asteroid discovered by Endate and Watanabe in Kitame in 1994. A total of 502 data points were obtained over four nights during the period 2012 January 1-19 with average magnitude of 15.6 and average SNR of 57. The lightcurve shows a period of 4.8742 ± 0.0002 h and amplitude of 0.37 ± 0.02 mag. The result is in agreement with one found by Warren (2012).

(15269) 1990 XF is a main-belt asteroid discovered by Kushida and Muramatsu in Yatsugatake in 1990. A total of 1304 data points were obtained over 12 nights during the period 2012 April 4 to June 10, with average magnitude of 15.4 and average SNR of 69. The lightcurve shows a period of 26.708 ± 0.001 h and amplitude of 0.62 ± 0.02 mag.

Acknowledgements

The measurements reported make use of the *AAVSO Photometric All-Sky Survey (APASS)* catalog, which is funded by the Robert Martin Ayers Sciences Fund.

Thanks to Darren Wallace of RDO and his collaborators at New Mexico Skies for maintaining the equipment in Australia and to Richard Miles and Peter Birtwhistle for sharing information via the British Astronomical Association's Asteroids and Remote Planets Section.

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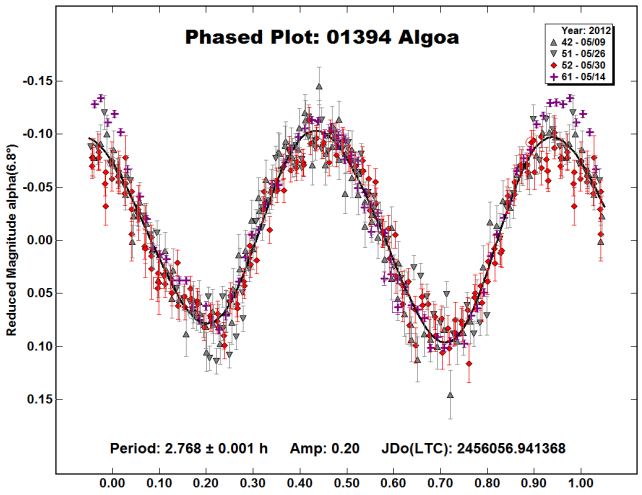

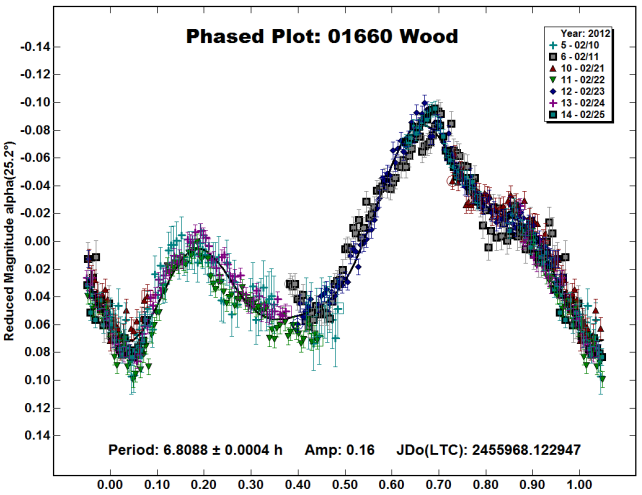

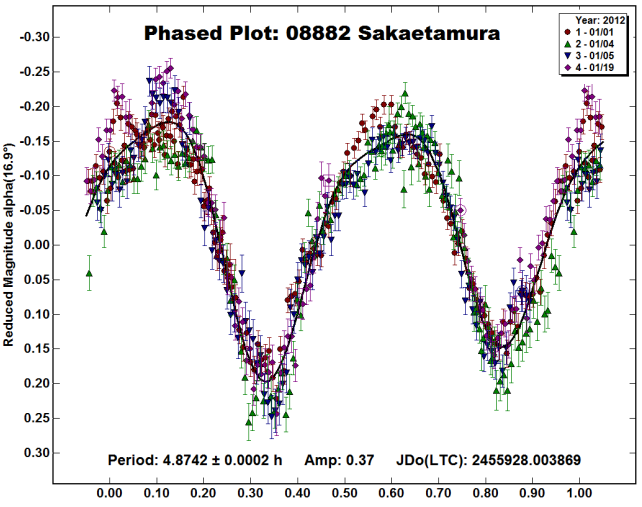

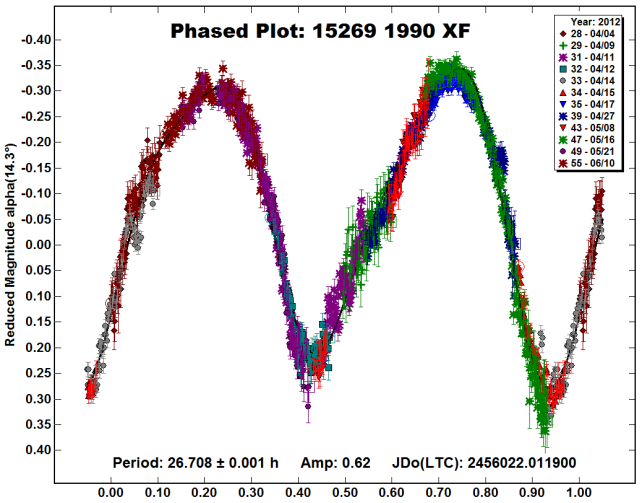

LIGHTCURVE FOR 7958 LEAKEY: A NEW HUNGARIA BINARY

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Analysis of CCD photometric observations of the Hungaria asteroid 7958 Leakey made in 2012 reveals that the object is mostly likely a binary with a primary rotation period of 2.34843 ± 0.00006 h, A = 0.22 mag. The orbital period of the tidally-locked satellite is likely 50.29 ± 0.08 h, although it's possible that the period is 25.26 ± 0.04 h. The secondary lightcurve shows a bowing (amplitude) of about 0.05 mag, indicating that satellite has a projected a/b ratio of 2/1. Two possible mutual events (occultations/eclipses) were observed. From these, the estimated size ratio of the two bodies is Ds/Dp = 0.30 ± 0.03. Additional observations are needed to confirm these results.

The Hungaria asteroid was observed starting the middle of 2012 June at the Palmer Divide Observatory (PDO) using a 0.35-m Schmidt-Cassegrain (SCT) with an SBIG STL-1001E CCD camera. Analysis of the data after several observing runs indicated the possibility that the asteroid was a binary with a somewhat long orbital period, $P > 24$ hours. A request for assistance was made to the Center for Solar System Studies (CS3) when poor weather and other conditions prevented additional observations at PDO. The observations at CS3 used a 0.35-m SCT and SBIG ST-10 and were mostly at the end of June, which helped considerably by filling in missing sections of the secondary period. All images were unfiltered. The data were put onto an internal standard system