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77.

LIGHTCURVES AND PERIODS FOR ASTEROIDS 105 ARTEMIS, 978 AIDAMINA, AND 1103 SEQUOIA

Crystal LeCrone
Allison Duncan
Elaine Kirkpatrick
Rose-Hulman Institute of Technology CM 171
5500 Wabash Avenue
Terre Haute, IN 47803
elaine.m.kirkpatrick@rose-hulman.edu

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CCD images recorded in July 2003 using a Celestron C-14 telescope yielded lightcurves and periods for three asteroids: 105 Artemis has a period of 17.80 ± 0.05 h and an amplitude of 0.09 mag; 978 Aidamina has a period of 10.099 ± 0.004 h and an amplitude of 0.1 mag; 1103 Sequoia has a period of 3.04 ± 0.01 h and an amplitude of 0.34 mag.

Introduction and Procedure

During the summer of 2003 one Rose-Hulman student (LeCrone) and a professor (Ditteon) obtained images at Oakley Observatory, which is located in Terre Haute, Indiana at an altitude of 178 m. The images were captured with a Celestron C-14 telescope operating at $f/7$ on a Paramount GT-1100 mount using an AP7 CCD camera. Exposures were 180 seconds.

Asteroids were selected for observation using *TheSky*, published by Software Bisque, to locate asteroids that were at an elevation angle of between 20° and 30° one hour after local sunset. In addition, *TheSky* was set to show only asteroids between 14 and 16 mag. The asteroids were cross checked with Alan Harris' list of lightcurve parameters (Harris, 2003). We tried to observe only asteroids that did not have previously reported measurements or had very uncertain published results.

Standard image processing was done using *MaxImDL*, published by Diffraction Limited. Photometric measurements and light curves were prepared using *MPO Canopus*, published by BDW Publishing.

Observations and Results

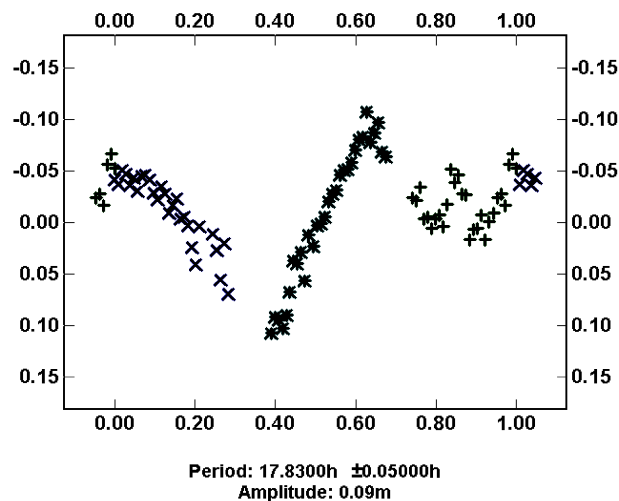
A total of seven asteroids were observed during this campaign, but lightcurves were not found for all of these asteroids. If an asteroid

had a very small variation in brightness, or if there was a large amount of noise, that asteroid was dropped from further observation. The data on 1499 Pori and 1775 Zimmerwald turned out to be little more than noise, while the images for 1428 Mombasa and 3484 Neugebauer were of poor quality. We report our successful results below. All of our data is available upon request.

105 Artemis

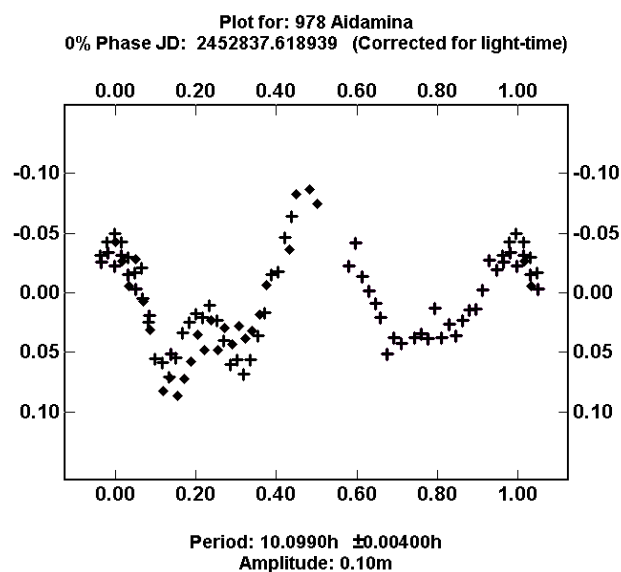
Asteroid 105 Artemis was discovered on 16 September 1868 by J. C. Watson at Ann Arbor. It was named after the Greek goddess, daughter of Zeus, and twin sister of Apollo (Schmadel, 1999). A total of 87 images were taken over three nights: 2003 July 17, 23, and 24. The data reveal a lightcurve with a 17.80 ± 0.05 h period and 0.09 mag amplitude.

Plot for: 105 Artemis
0% Phase JD: 2452837.623430 (Corrected for light-time)



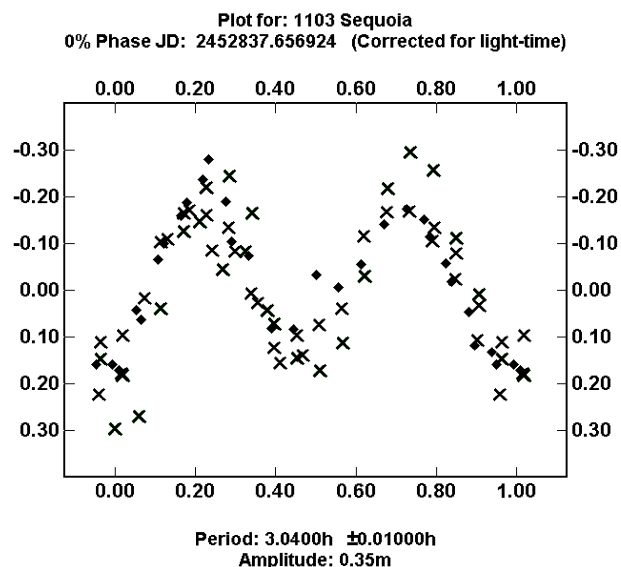
978 Aidamina

Asteroid 978 Aidamina was discovered on 18 May 1922 by S. I. Belyavskij at Simeis and independently discovered on 30 May 1922 by M. Wolf and Heidelberg. It was named in honor of Aida Minaevna, a friend of the discoverer's family (Schmadel, 1999). A total of 86 images were taken over three nights: 2003 July 17, 23, and 24. The data reveal a lightcurve with a 10.099 ± 0.004 h period and 0.1 mag amplitude.



1103 Sequoia

Asteroid 1103 Sequoia was discovered on 9 November 1928 by W. Baade at Bergedorf. It was named after the Sequoia National Park (Schmadel, 1999). A total of 81 images were taken over five nights: 2003 July 17, 23, and 24. The data reveal a lightcurve with a 3.04 ± 0.01 h and 0.34 mag amplitude.



References

- Schmadel, L. D. (1999). *Dictionary of Minor Planet Names*. Springer: Berlin, Germany. 4th Edition.
- Harris, A. W. and Warner, B. D (2004). Minor Planet Lightcurve Parameters. 2003 Dec. 15. <http://cfa-www.harvard.edu/iau/lists/LightcurveDat.html>, last referenced 29 April.

2004 SPRING OBSERVING CAMPAIGN AT ROSE-HULMAN INSTITUTE: RESULTS FOR 955 ALSTEDE, 2417 MCVITTIE, 4266 WALTARI, AND 5036 TUTTLE

Crystal LeCrone
Allison Duncan
Richard Ditteon

Rose-Hulman Institute of Technology CM 171
5500 Wabash Avenue
Terre Haute, IN 47803
richard.p.ditteon@rose-hulman.edu

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CCD images recorded in February and April 2004 using the Tenagra 32 inch telescope yielded light curves and periods for four asteroids: 955 Alstede has a period of 5.19 ± 0.01 h and an amplitude of 0.25 mag; 2417 McVittie has a period of 4.934 ± 0.002 h and an amplitude of 0.31 mag; 4266 Waltari has a period of 11.200 ± 0.005 h and an amplitude of 0.11 mag; and 5036 Tuttle has a period of 3.775 ± 0.001 h and an amplitude of 0.33 mag.

Introduction and Procedure

During the winter and spring of 2004 two Rose-Hulman students (Duncan, LeCrone) and a professor (Ditteon) obtained images with the 32" Ritchey-Chretien telescope at Tenagra Observatory in Arizona. The Tenagra telescope operates at f/7 with a CCD camera using a 1024x1024x24u SITe chip (Schwartz, 2004). Exposure times were generally 90 seconds and our images were binned 2 by 2.

Asteroids were selected for observation using *TheSky*, published by Software Bisque, to locate asteroids that were at an elevation angle of between 20° and 30° one hour after local sunset. In addition, *TheSky* was set to show only asteroids between 14 and 16 mag. Bright asteroids were avoided because we pay for a minimum 60 second exposure while using this telescope. The asteroids were cross checked with Alan Harris' list of lightcurve parameters (Harris, 2003). We tried to observe only asteroids that did not have previously reported measurements or had very uncertain published results.

Observation requests for the asteroids and Landolt reference stars were submitted by Ditteon using ASCII text files formatted for the TAO scheduling program (Schwartz, 2004). The resulting images were downloaded via ftp along with flat field, dark and bias frames. Standard image processing was done using *MaxImDL*, published by Diffraction Limited. Photometric measurements and light curves were prepared using *MPO Canopus*, published by BDW Publishing.

Observations and Results

A total of six asteroids were observed during this campaign, but lightcurves were not found for all of these asteroids. If an asteroid had a very small variation in brightness, or if there was a large amount of noise, that asteroid was dropped from further observation. This allowed the maximum number of quality observations with limited funds. The data on two asteroids (292 Alguna and 1511 Dalera) turned out to be little more than