

ROTATIONAL PERIODS OF 96 AEGLE, 386 SIEGENA, 390 ALMA, 544 JETTA, 2771 POLZUNOV, AND (5917) 1991 NG

Robert D. Stephens
11355 Mount Johnson Court
Rancho Cucamonga, CA 91737 USA
rstephens@foxandstephens.com

(Received: 9 September)

Results for the following asteroids (lightcurve period and amplitude) observed from Santana Observatory during the period July to September 2004 are reported: 96 Aegle 13.82 ± 0.01 hr, 0.15 mag; 386 Siegena 15.98 ± 0.01 hr, 0.24 mag; 390 Alma 3.74 ± 0.01 hr, 0.48 mag; 544 Jetta 7.745 ± 0.005 hr, 0.50 mag; 2771 Polzunov 11.66 ± 0.01 hr, 0.15 mag; (5917) 1991 NG 2.65 ± 0.01 hr, 0.38 mag.

Santana Observatory (MPC Code 646) is located in Rancho Cucamonga, California at an elevation of 400 meters and is operated by Robert D. Stephens. Details of the equipment used can be found in Stephens (2003) and at the author's web site (<http://home.earthlink.net/~rdstephens/default.htm>). All of the asteroids were selected from the "CALL" web site "List of Potential Lightcurve Targets" (Warner 2004).

96 Aegle. 639 observations over five sessions between August 26 and 30, 2004 were used to derive the synodic rotational period of 13.82 ± 0.01 hours with an amplitude of 0.15 ± 0.02 magnitude. I observed Aegle around the time of the Full Moon and used a Johnsons-Cousins red filter to increase the signal-to-noise ratio. Typical FWHM was around 3.6 arcseconds and signal-to-noise was around 120. Aegle was a very difficult target due to the shape of its lightcurve. The lightcurve is not bimodal and has a very small amplitude making it difficult to identify repeating features. It was first observed in 1980 by Harris and Young (1989). They suspected a period of around 10 hours. Wetter (1997) observed it in 1996 but was not able to refine the period. Blanco (2000) observed it in 1996 reporting a period of 10.470 hours. Finally Slivan and Roller (2001) observed it in 2001 reporting a period of 26.53 hours and a quality code of 2, while commenting on the lack of repeating features.

386 Siegena. 579 observations over nine sessions between July 3 and 20, 2004 were used to derive the synodic rotational period of 15.98 ± 0.01 hours with an amplitude of 0.24 ± 0.04 magnitude. Siegena was originally reported to have a 9.763 hour period (Zappala 1982). It was observed again in 1979 and 1980 Harris and Young (1989). The resulting period was inconclusive but consistent with the Zappala period. The amplitude in 1979 was about 0.1 magnitudes and somewhat higher in 1980; both far less than it appears in 2004. Since the resulting period is almost exactly two thirds of the Earth's rotation, it was not possible to get a complete composite lightcurve in the short summer nights. However, both of the minima were repeatedly observed lending confidence in the resulting period.

390 Alma. 209 observations on August 7 and 8, 2004 were used to derive the synodic rotational period of 3.74 ± 0.01 hours with an amplitude of 0.48 ± 0.03 magnitude.

544 Jetta. 396 observations over three sessions between August 17 and 21, 2004 were used to derive the synodic rotational period of 7.745 ± 0.005 hours with an amplitude of 0.50 ± 0.02 magnitude.

2771 Polzunov. 601 observations over eight sessions between July 22 and August 6, 2004 were used to derive the synodic rotational period of 11.66 ± 0.01 hours with an amplitude of 0.15 ± 0.03 magnitude.

(5917) 1991 NG. 318 observations over three sessions between August 9 and 11, 2004 were used to derive the synodic rotational period of 2.65 ± 0.01 hours with an amplitude of 0.38 ± 0.03 magnitude.

Acknowledgments

Many thanks to Brian Warner for his continuing work and enhancements to the software program "Canopus" and for maintaining the CALL Web site that helps coordinate collaborative projects between amateur astronomers. Also thanks

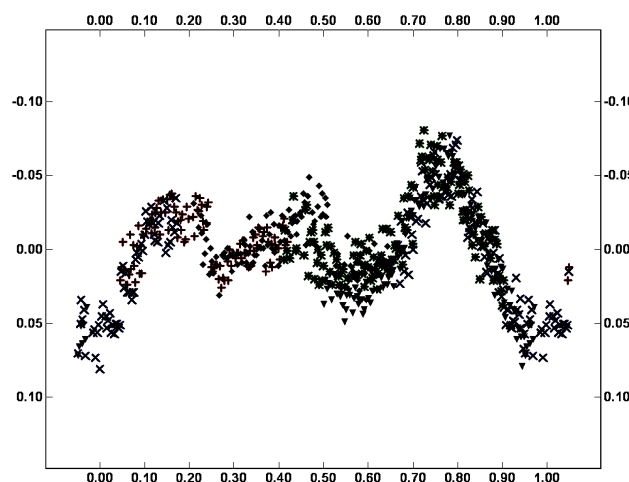


Figure 1: Lightcurve of 96 Aegle based upon a derived period of 13.82 ± 0.01 hours. The 0% Phase is equal to 2453246.900133 JD (corrected for light-time).

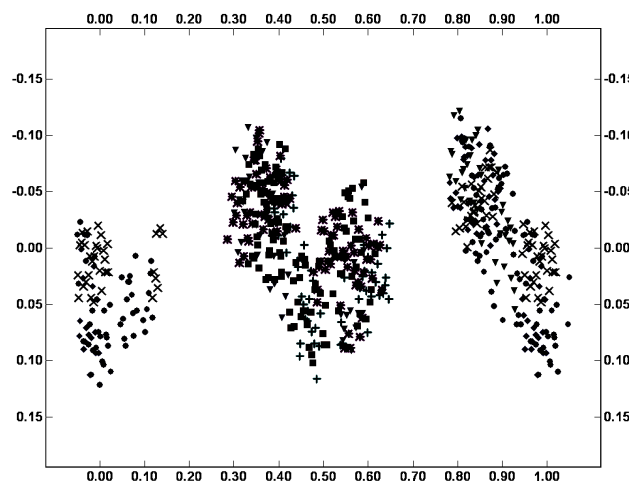


Figure 2: Lightcurve of 386 Siegena based upon a derived period of 15.98 ± 0.01 hours. The 0% Phase is equal to 2453199.800670 JD (corrected for light-time).

to Stephen Slivan who reran his 96 Aegle data against this new period.

References

Blanco, C., Martino, M. D. and Riccioli, D. (2000). "New rotational periods of 18 asteroids". *Planetary and Space Science* **48**, 271-284.

Harris, A. W., and Young, J. (1989). "Asteroid lightcurve observations from 1979-1981" *Icarus* **81**, 314-364.

Slivan, S., and Roller, E., (2001). "New lightcurve observations of 96 Aegle". *Minor Planet Bulletin* **28**, 69-71.

Stephens, R. D. (2003). "Photometry of 2134 Dennispalm, 2258 Viipuri, 3678 Mongmanwai, 4024 Ronan, and 6354 Vangelis". *Minor Planet Bulletin* **30**(3), 46-48

Stephens, R. D. (2004).

<http://home.earthlink.net/~rdstephens/default.htm>.

Warner, B. (2004). "Potential Lightcurve Targets". <http://www.minorplanetobserver.com/astlc.targets>.

Wetter, C. J. (1997). "CCD photometry of asteroids at the U. S. Air Force Academy Observatory during 1996". *Minor Planet Bulletin* **24**, 32.

Zappala, V., Scaltriti, F., Lagervist, C., Rickman, H., and Harris, A. W., (1982). "Photometric photometry of asteroids 33 Polyhymnia and 386 Siegena". *Icarus* **52**, 196-201.

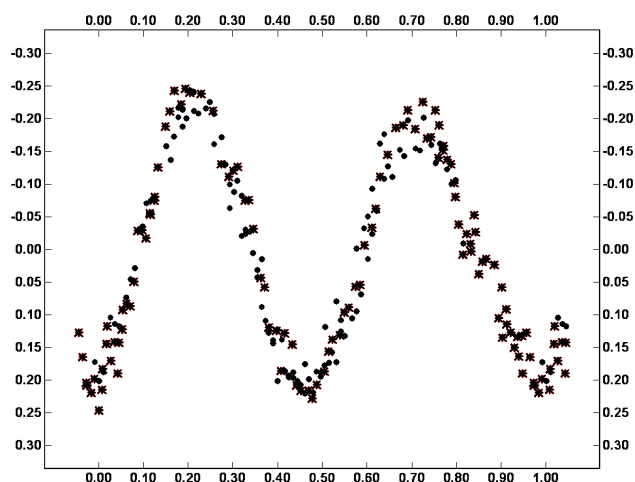


Figure 3: Lightcurve of 390 Alma based upon a derived period of 3.74 ± 0.01 hours. The 0% Phase is equal to 2453224.962753 JD (corrected for light-time).

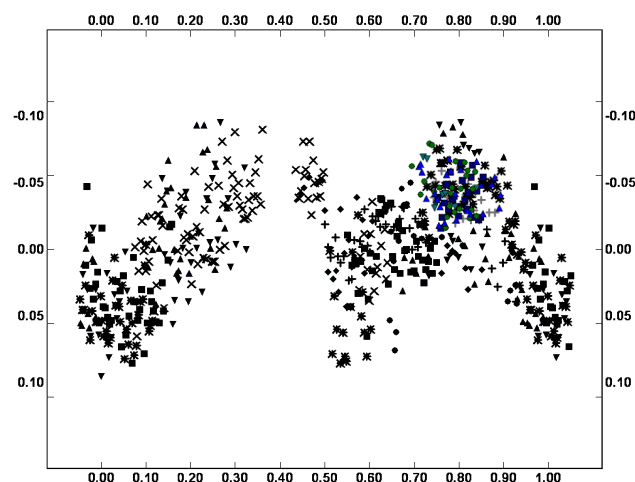


Figure 5: Lightcurve of 2771 Polzunov based upon a derived period of 11.66 ± 0.01 hours. The 0% Phase is equal to 2453216.821233 JD (corrected for light-time).

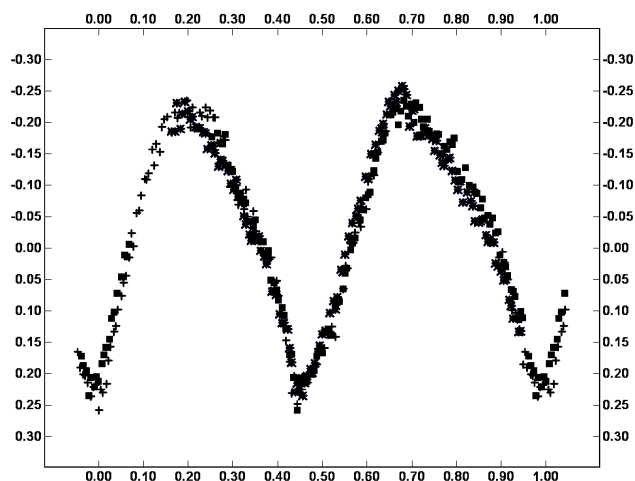


Figure 4: Lightcurve of 544 Jetta based upon a derived period of 7.745 ± 0.005 hours. The 0% Phase is equal to 2453234.785610 JD (corrected for light-time).

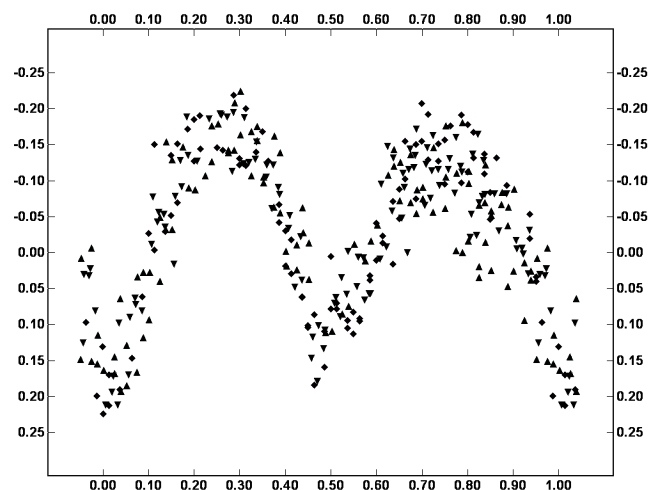


Figure 6: Lightcurve of (5917) 1991 NG based upon a derived period of 2.65 ± 0.01 hours. The 0% Phase is equal to 2453228.781523 JD (corrected for light-time).