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1.

LIGHTCURVE OF 755 QUINTILLA

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The lightcurve period of 755 Quintilla is 4.552 ± 0.001 hours, with an amplitude of 0.38 mag. We also report color indices of $B-V=0.67 \pm 0.03$ and $V-R=0.41 \pm 0.03$.

Lightcurve observations of 755 Quintilla were made at Carbuncle Observatory and Altimira Observatory during April 2004, on dates near the asteroid's opposition. In June 2004, one evening was devoted to determining its color indices. At Carbuncle, we utilized a 0.35 m SCT (F/4.1) with a ST-7 ME CCD. At Altimira, we utilized a 0.28 m SCT (F/6.3) with a ST-8 XE CCD.

No previous lightcurves have been published for this asteroid. The composite lightcurve from our observations shows a rotation period of 4.552 ± 0.001 hours. Our observations, wrapped to this inferred period, are shown in the Figure. Details on our observing locations and data collection are given in Table I.

Table I: Observing Details

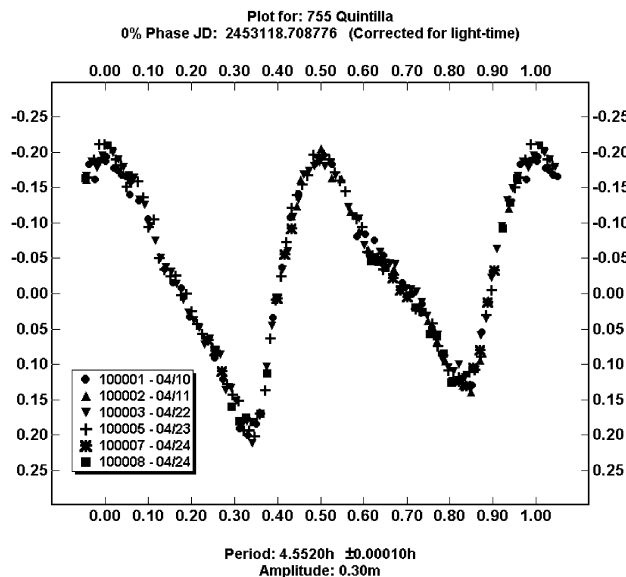
Date	Observatory	Filter	Exp, sec
4-10-2004	Carbuncle	clear	90
4-11-2004	Carbuncle	clear	90
4-22-2004	Altimira	R	240
4-23-2004	Altimira	R	240
4-24-2004	Altimira	R	240
4-24-2004	Altimira	V	240

The Small Bodies Node (<http://pdssbn.astro.umd.edu/>) reports a color index $(B-V) = 0.688 \pm 0.029$ for this asteroid, and absolute magnitude $H = 9.81$ (using slope parameter $G = 0.15$). On 12 June 2004 UT, Altimira Observatory observed the asteroid in B, V, and R bands, to determine its V-magnitude and color indices. The transformation coefficients for Altimira Observatory's instrument have been previously determined. They were updated for this project, with no significant change noted during the past 6 months.

The nightly zero-point was determined by imaging a Landolt standard field that was fortuitously only a few degrees away from the asteroid, thereby avoiding the need to account for air mass difference. The standard field was measured in B, V, and R filters immediately before and after imaging of the asteroid.

The asteroid imaging sequence was V-R-B-B-R-V. During this 25-minute imaging sequence, the asteroid's rotational phase orientation (referring to Figure) ranged from 0.63 to 0.73, so the measured absolute magnitude during this sequence is quite close to the mean brightness (averaged over the lightcurve).

The measured color indices were: $(B-V) = 0.67 \pm 0.03$ (which is in good agreement with the Small Bodies Node), and $(V-R) = 0.41 \pm 0.03$. The observed $V = 14.61$, when adjusted for distance from the Earth and Sun gives a reduced magnitude of $V_R = 10.88$ at solar phase angle = 19.1 degrees. Using an (assumed) slope parameter $G = 0.15$, this implies an absolute magnitude of $H = 9.9$, which is in good agreement with the $H = 9.81$ reported by the Small Bodies Node.



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

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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

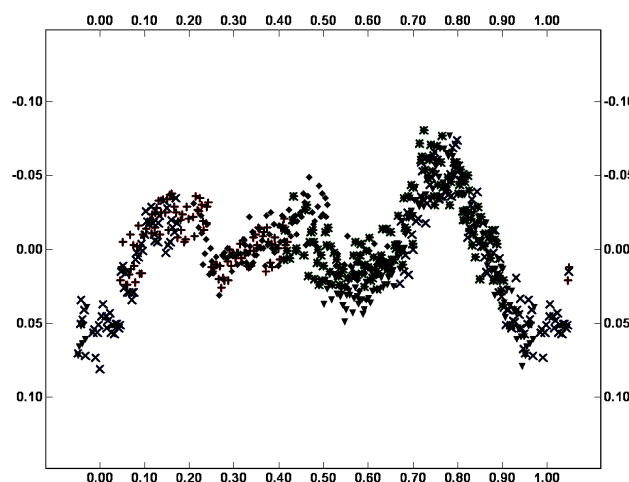


Figure 1: Lightcurve of 96 Aegle based upon a derived period of 13.82 ± 0.01 hours. The 0% Phase is equal to 2453246.900133 JD (corrected for light-time).

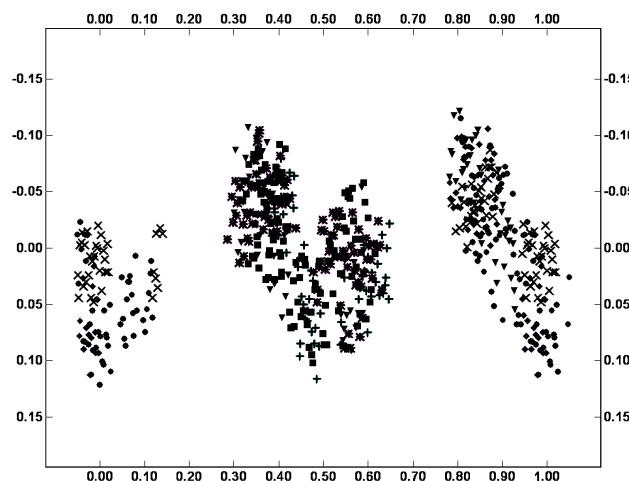


Figure 2: Lightcurve of 386 Siegena based upon a derived period of 15.98 ± 0.01 hours. The 0% Phase is equal to 2453199.800670 JD (corrected for light-time).