

period. Even though the observing circumstances were similar to the 2003 observations, the amplitude using calibrated data was far greater. This prompted Stephens to recover and re-measure the 2003 observations using the new calibration methods. The revised results were a partial lightcurve consistent with the 2010 observations. Without calibrating the nightly zero points, a period from the 2003 data could not have been obtained.

The combination of the estimated size of 10 km and ~360 h period make the asteroid a good candidate for tumbling, or non-principal axis rotation (NPAR; see Pravec et al. 2005). However, since the conversion of the 2MASS magnitudes has errors up to ± 0.05 mag, the night-to-night calibrations have minor adjustments. For this reason we cannot say for certain whether or not Ronan is tumbling.

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ASTERIODS OBSERVED FROM THE SHED OF SCIENCE OBSERVATORY: 2009 OCTOBER – 2010 MARCH

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Lightcurve measurements from the Shed of Science Observatory for 2009 October to 2010 March are reported: 616 Elly, $P = 5.30 \pm 0.02$ h; 1372 Haremar, $P = 15.25 \pm 0.03$ h; 1416 Renauxa, $P = 8.700 \pm 0.004$ h; 2181 Fogelin, $P = 14.07 \pm 0.01$ h; 3458 Bodougnat, $P = 3.8565 \pm 0.0005$ h; and 8062 Okhotsysmskij, $P = 5.282 \pm 0.002$ h.

Observations of six asteroids were made at the Shed of Science Observatory between 2009 September and 2010 March. A 0.35-m Schmidt-Cassegrain (SCT) was used with an SBIG ST10XE CCD camera working at a scale of 0.94 arcsec/pixel. Exposures were made through a Celestron UHC LPR filter. *MPO Canopus* was used to perform differential photometry on the reduced images.

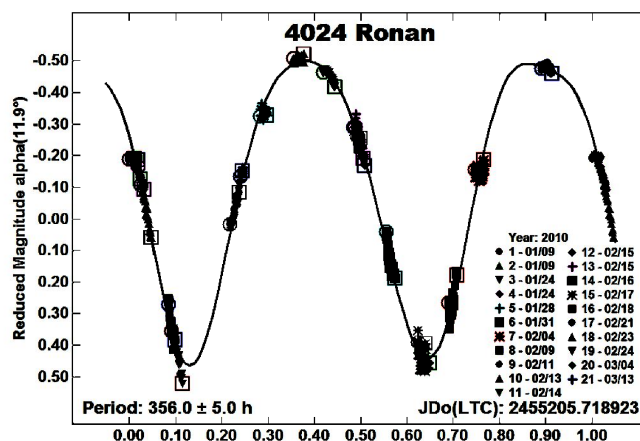


Figure 1: 2010 observations. Avg. $L_{PAB} = 128^\circ$, Avg. $B_{PAB} = 10^\circ$.

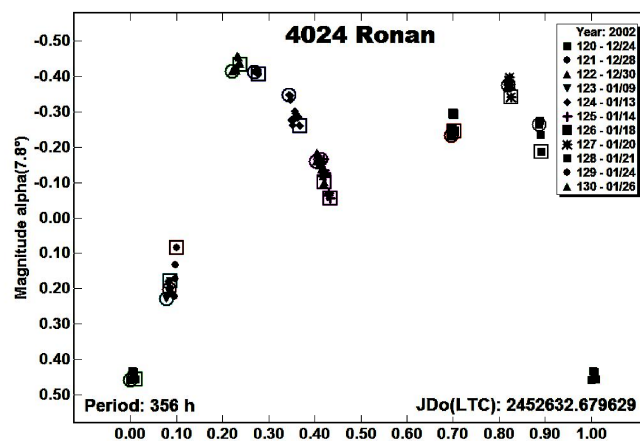


Figure 2: 2003 observations set to $P = 356$ h. Avg. $L_{PAB} = 90^\circ$, Avg. $B_{PAB} = 4^\circ$.

616 Elly. This object was observed on two consecutive nights, 2010 February 24 and 25. Analysis indicates a period of $P = 5.30 \pm 0.02$ h, $A = 0.38$ mag. This is in agreement with recent results by Warner (2010) and earlier results from Alvarez (2004) and Tedesco (2004). Due to the object's short period and the long winter nights, we were able to complete the curve with partial double coverage on both evenings, giving it a reliability code of $U = 3$. (see Warner et al., 2009, for the definition of the U rating).

1372 Haremar. A period of $P = 15.25 \pm 0.03$ h and $A = 0.1$ mag. were derived from seven nights' observations. The curve is not complete and other solutions are possible. We give these results a reliability code of $U = 2$. The ambiguity could be resolved with more observations over a longer time period or, more quickly, by involving another observer at a well-removed longitude.

1416 Renauxa. The lightcurve of this object has been measured on other occasions by Tedesco et al. (2004) and Lagerkvist (1978), both of whom reported a monomodal curve with a period of ~4.3 h. Our observations indicate that the lightcurve has an asymmetric shape that slightly favors a bimodal solution with a period of $P = 8.700 \pm 0.004$ h and $A = 0.1$ mag.

2181 Fogelin. A period of $P = 14.07 \pm 0.01$ h and $A = 0.57$ mag were derived from four nights' observations. This is the first known lightcurve of this object. We give it a reliability code of $U = 3$.

3458 Bodougnat. A period of $P = 3.8565 \pm 0.0005$ h and $A = 0.38$ mag were derived from three nights' observations with complete coverage of the lightcurve on two consecutive nights followed by a single night a month later. This is the first known lightcurve of this object; the observations support a reliability code of U = 3.

8062 Okhotsyskij. We derived a period of $P = 5.282 \pm 0.002$ h and $A = 0.49$ mag from three nights' observations. Observations on February 11 and 18 covered more than the entire period with the latter covering nearly two full rotations. This is the first known lightcurve of this object; we give it a U=3 reliability code.

Acknowledgements

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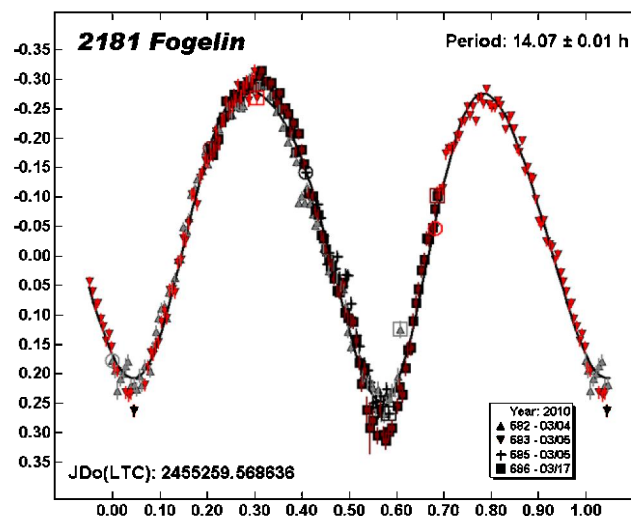
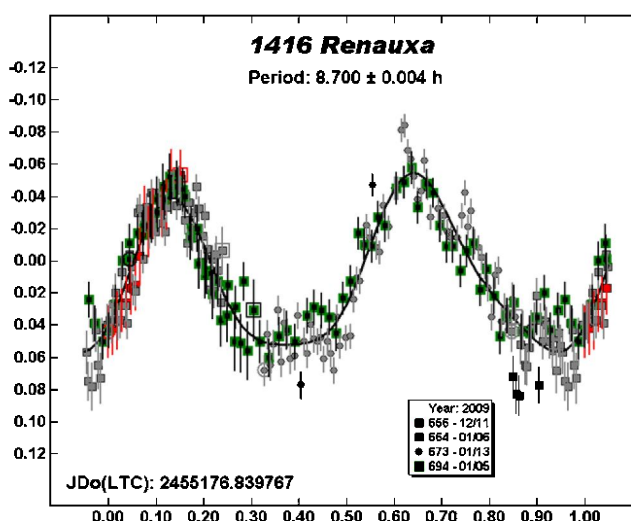
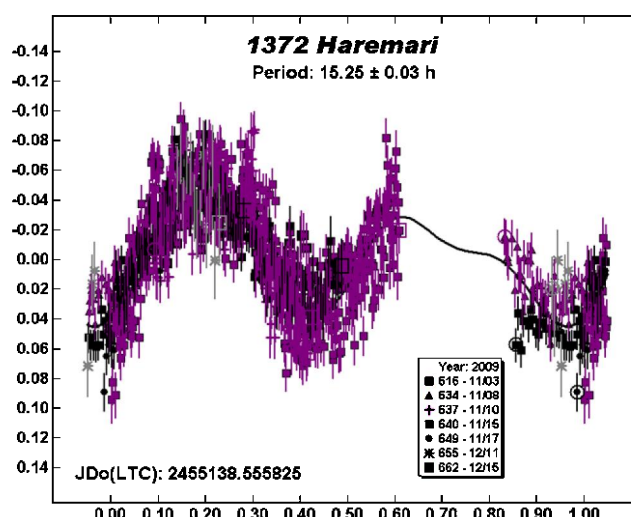
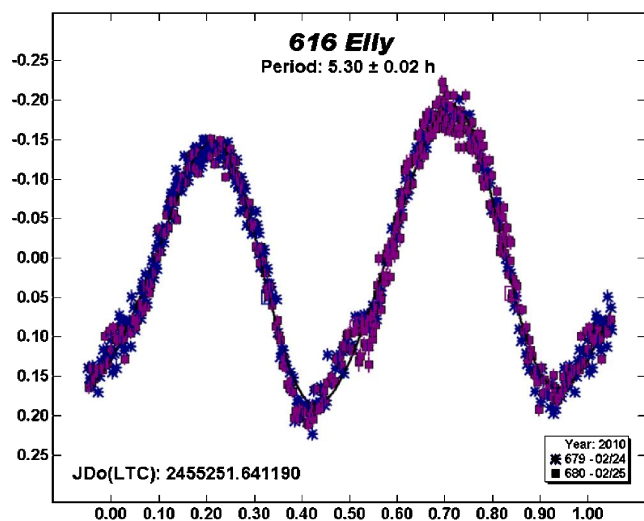
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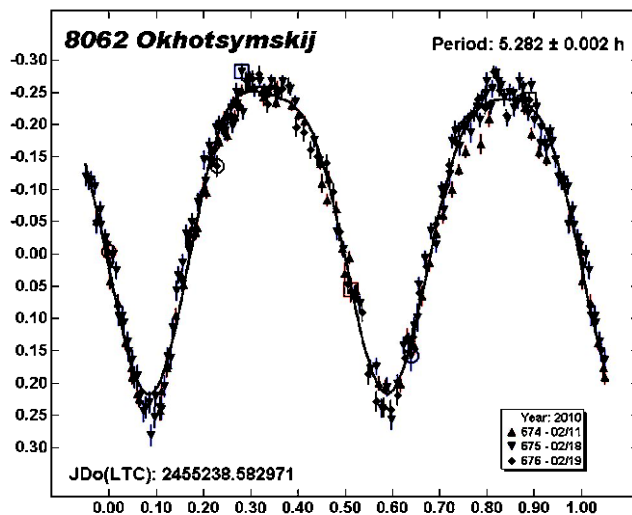
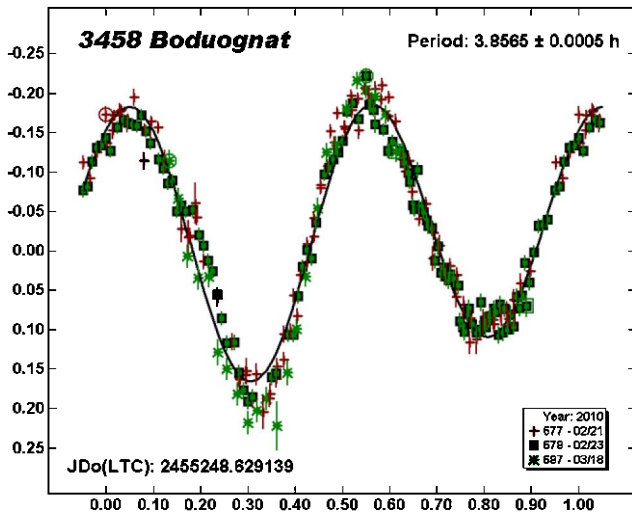
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UPON FUTHER REVIEW: I. AN EXAMINATION OF PREVIOUS LIGHTCURVE ANALYSIS FROM THE PALMER DIVIDE OBSERVATORY

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Updated results are given for ten asteroids previously reported from the Palmer Divide Observatory. The original images were re-measured to obtain new data sets using the latest version of MPO Canopus photometry software, analysis tools, and revised techniques for linking multiple observing runs covering several days to several weeks. Results that were previously not reported or had significantly different periods and/or amplitudes were found for 222 Lucia, 331 Etheridgea, 421 Zahringia, 506 Marion, 586 Thekla, 756 Lilliana, 862 Franzia, 957 Camelia, 1042 Amazone, and 1266 Tone. This is the first in a series of papers that will examine results obtained during the initial years of the asteroid lightcurve program at PDO.

The availability of improved analysis tools and techniques along with the experience gained over more than a decade of asteroid lightcurve photometry have lead to a program to re-examine the early work and results at the Palmer Divide Observatory (c. 1999-2006). In most cases, any changes in the period and/or amplitude as a result of the new analysis were statistically insignificant. However, there were some cases where the new results were significantly different. This paper is the first in a series that reports updated results from the new analysis, giving updates on 10 of the 17 significant revisions. Subsequent papers will complete the list of significant revisions and then those of lesser importance found in the initial stage of the re-evaluation program. Subsequent stages may result in additional updates.

MPO Canopus, developed by the author, is used exclusively at PDO. Since its first version, which did only the most essential functions of photometry, it has undergone a number of revisions. These now include an improved sky background algorithm, a star

#	Name	Original				Revised				
		Per	Amp	U	Ref	Per	PE	Amp	AE	U
221	Lucia				Not previously published	7.6	0.2	0.38	0.02	2
331	Etheridgea	6.82	0.05	2	Warner; MPB 30, 61-64	Long?				1
421	Zahringia	15.5	0.12	1	Robinson; MPB 29, 30-31	6.42 ²	0.01	0.10	0.01	2
506	Marion	10.58	0.35	2	Robinson; MPB 29, 6-7	13.56	0.01	0.30	0.01	2
586	Thekla	10.630	0.24	2	Warner; MPB 27, 20-21	13.68	0.01	0.29	0.01	2+
756	Lilliana				Not previously published	9.37	0.05	0.30	0.02	2-
862	Franzia	15.05 ¹	0.12	2	Warner; MPB 32, 29-32	7.52	0.01	0.13	0.01	2+
862	Franzia					7.65 ³	0.01	0.10	0.02	2
957	Camelia	5.391	0.32	2	Warner; MPB 28, 4-5	150	30	>0.30		1+
1042	Amazone	16.26	0.10	2	Warner; MPB 32, 90-92	540	30	>0.25		2
1266	Tone	11.82	0.12	2	Warner; MPB 30, 61-64	7.4	0.1	0.06	0.01	2

Table I. Summary of original and revised results. The period is in hour and the amplitude is in magnitudes. The U code rating is based on the criteria outlined in the Lightcurve Database (Warner et al., 2009c). Unless otherwise stated, the references are from the *Minor Planet Bulletin* for the original results, with only the volume and page numbers given.

¹ Ambiguous; 7.6 h also given.
² Ambiguous; 12.86 h also possible.
³ Ambiguous; 15.27 h also possible.