

seconds per pixel. Automatic bias, dark and flat reductions were handled thru ACP and *MaxIm/DL* using master reduction files. Photometric measurements and lightcurves were prepared using *MPO Canopus*.

Asteroid 1484 Postrema was selected from the CALL website "List of Potential Targets" (Warner 2006). This asteroid was then checked with the list of known asteroid lightcurves parameters maintained by Alan Harris (Harris 2006). I wanted to observe an asteroid that had no known period. After gathering the first nights of data, I came up with a lightcurve of 6 hours. However, after checking with Brian (Warner 2006) on the shape of this monomodal curve, he suggested that I was probably only looking at half phase since most asteroids are likely to have a bimodal curve. Gathering more data showed that the period was converging on ~12.2 hours thus proving Warner's hunch of 6 hours being half phase.

In total, 442 images were used to obtain a bimodal lightcurve of 12.1923 hours with a 0.20 magnitude amplitude. Periods between 6-18 hours were also tried but either showed half period, 6 hours, or just didn't fit when more data were added. 12.1923 hours seems to be the most probable period from this data. No data have been collected for phase period 0.4-0.6 yet so its full amplitude curve could not be estimated.

Acknowledgements

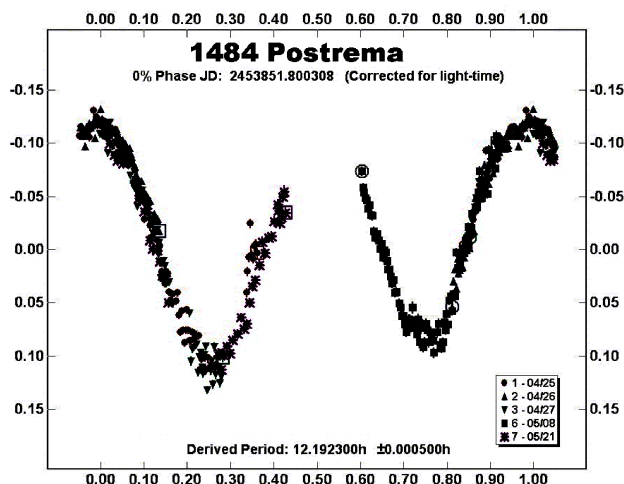
I wish to thank Brian D Warner for his advice and help through private emails as I was working my first minor planet lightcurve. His enthusiasm to help amateurs with scientific contributions from minor planet lightcurves is what got me hooked on this endeavor.

References

Harris, A.W., Warner, B.D. Minor Planet Lightcurve Parameters. 2006. <http://www.cfa.harvard.edu/iau/lists/LightcurveDat.html>

CALL website supported by Brian D. Warner. <http://www.minorplanetobserver.com/astlc/default.htm>

Warner, B.D. (2006) Personal communication.



THE LIGHTCURVES OF 1043 BEATE AND 1186 TURNERA

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(Received: 6 July)

Observations of 1043 Beate in April 2006 found the synodic period to be 22.05 ± 0.10 hr or, possibly, 44.10 ± 0.10 hr. The lightcurve amplitude was 0.32 ± 0.02 mag. The synodic period for 1186 Turnera was determined to be 12.066 ± 0.004 hr based on observations also obtained in April 2006; its lightcurve amplitude was 0.34 ± 0.02 mag. With both having adopted periods nearly commensurate with 24 hr, the importance of collaboration among observers at different longitudes was again demonstrated. This was particularly true in the case of 1043 Beate, where combined runs allowed forming a single long run on more than one occasion, and so provided additional clues in finding a solution.

Warner initially observed both asteroids 1043 Beate and 1186 Turnera in early April 2006 at the Palmer Divide Observatory using 0.35m SCT and ST-9E on asteroid 1043 and a 0.5m R-C and FLI-1001E on asteroid 1186. In each case, it became immediately apparent that the period was long and maybe commensurate with 24 hr. If a solution was to be found in a reasonable time, help from a different location would be required. Higgins, who's Hunter's Hill Observatory is about 140° west of PDO, agreed to provide data on the two asteroids with his 0.36m SCT and ST-8E.

#	Date Range 2006	Phase	L_{PAB}	B_{PAB}
1043	Apr 14-27	12.7, 15.6	165.8	2.3
1186	Apr 14-20	13.4, 14.5	161.0	10.1

Table I. The phase and Phase Angle Bisector values for the extreme dates of observations for 1043 Beate and 1186 Turnera.

1043 Beate. As more data became available, it was found that they fit one of two solutions almost equally well. Figure 1 shows the complete data set phased to a period of 22.050 hr while Figure 2 shows the same data set phased to 44.10 hr. We favor the shorter period despite the unusual monomodal solution. This is the result of careful examination of sessions 4-9, which cover April 19-23 and include overlapping runs, i.e., the end of one observer's run was covered by the start of the other's.

Specifically, session 4 (April 19) leads up to and just past a maximum where it shows signs of "flattening out". Session 5 followed by 24 hours, or about 0.08 later in the 22 hr phase curve. This session covered the rise to and then extended the flattened portion of the curve. Session 6 – also 24 hr later – extended the flattened portion further. Finally, session 9, approximately 45 hr, or 2.04 revolutions later, seems to complete the flattened portion of the curve and then drop down to where session 8 picked up, it

being 24hr after session 7 and the expected 0.08 later in phase. Such apparent duplication of a feature within the lightcurve is not as readily apparent with the longer solution, and the fit of some overlapping sessions is not as clean, e.g., sessions 2, 5, 12, and 14 (April 16, 20, 25, and 27 respectively).

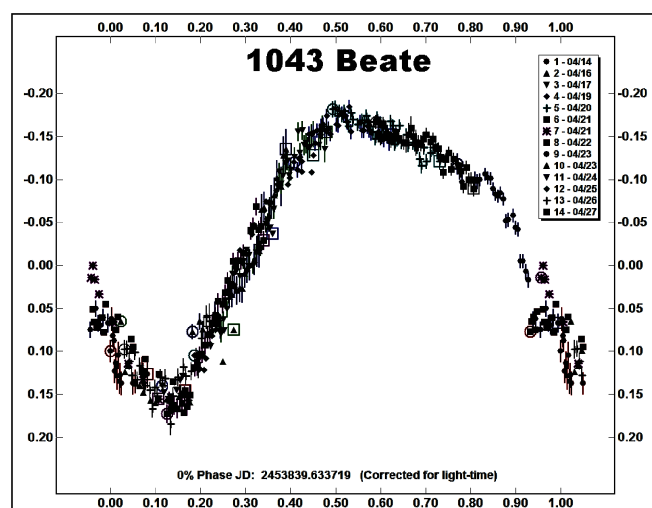


Figure 1. The lightcurve of 1043 Beate phased to 22.05hr.

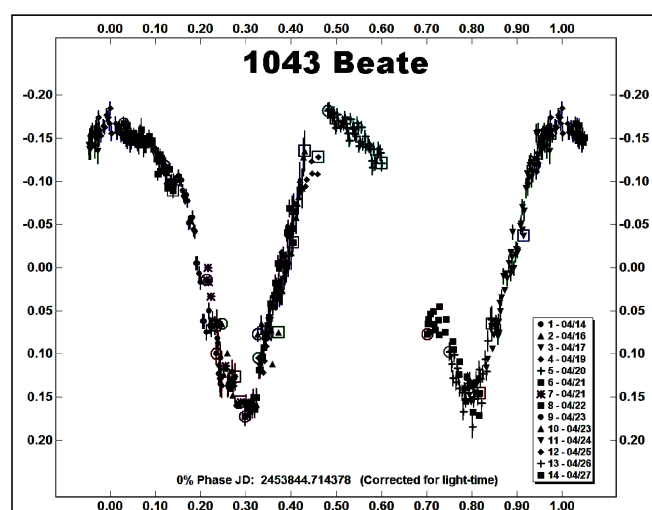


Figure 2. The lightcurve of 1043 Beate phased to 44.10hr.

All observations were made with a clear filter and the zero-point adjustments of the sessions were somewhat arbitrary, save where overlapping runs allowed matching them to approximately 0.01m. As noted by Petr Pravec (private communication), small changes in the zero points of some sessions provide reasonable solutions that differed by 0.1m, and possibly more. However, the fitting of the several sessions described above seems also to provide a reasonable "anchor" of its own and gives reasonable credence to the shorter, adopted solution. However, Alan Harris (private communication) favored the longer period, noting that "the absence of odd harmonics in the bimodal curve is more plausible than a 0.3mag amplitude monomodal curve." All of this pointing to the need for linked observations on a standard system in general and follow up work on this asteroid as circumstances allow.

1186 Turnera. Fortunately, the period for this main-belt asteroid proved to be much easier to resolve, with sessions 4-7 providing two sets of overlapping runs. The first three runs by Warner alone

could not resolve several aliases. The addition of the two runs by Higgins (sessions 5 and 7) that extended runs by Warner (sessions 4 and 6) on the last two nights eliminated all aliases and allowed finding a synodic period of 12.066 ± 0.004 hr. Figure 3 shows a plot phased to this period using the complete data set.

What helped in particular was catching the second minimum at phase 0.70 and seeing that it was not symmetric with the first minimum. The two runs covering the second minimum were the result of Higgins observations. Given the period, it would take about 90 rotations, or 45 days, for the sampling window open to one given location to move 1/2 cycle. With data from two widely spaced locations, the period was resolved after only two days of joint observations.

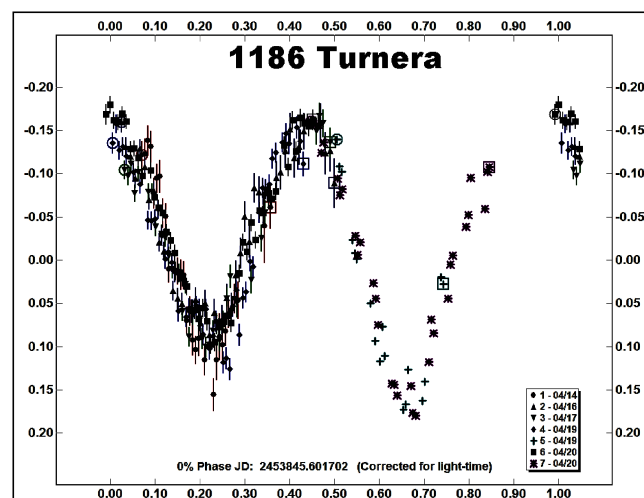


Figure 3. The lightcurve of 1186 Turnera phased to 12.066hr.

Acknowledgements

The authors thank Alan Harris of Space Science Institute, USA, and Petr Pravec, Astronomical Institute, Czech Republic, for their review and comments on this paper. Funding for observations at the Palmer Divide Observatory is provided by NASA grant NNG06GI32G and by National Science Foundation grant AST-0607505.

LIGHTCURVE ANALYSIS OF ASTEROIDS 453 TEA AND 454 MATHESIS

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(Received: 9 June Revised: 24 August)

CCD images recorded December 2005 to February 2006 yielded lightcurves and periods for two asteroids:
453 Tea 6.812 ± 0.001 hr, 0.30 ± 0.02 mag and
454 Mathesis, 8.378 ± 0.001 hr, 0.29 ± 0.02 mag.

R.P.Feynman Observatory is located in the south of Italy. Details of the observatory, equipment and observing strategy are reported