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LIGHTCURVE ANALYSIS OF 1304 AROSA

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The main-belt asteroid 1304 Arosa was observed in late 2005 and early 2006 in a collaborative effort by observers in France, Italy and the United States. A period of 7.7478 ± 0.0001 hr with an amplitude 0.375 ± 0.011 mag was derived.

In a collaborative effort between observatories in France, Italy and the United States, lightcurve observations of main-belt asteroid 1304 Arosa were obtained during 9 nights between December 23, 2005 and February 11, 2006. Table I provides details of the observational equipment used. The geometric parameters at the extreme dates of the observation period are shown in Table II.

Observer	Telescope	Camera
Bernasconi	Takahashi CN212, 0.2m	ST-7ME
Casulli	Newtonian 0.4m	ST-9XE
Fauerbach, Bennett	OGS RC, 0.4m	AP7ap

Table I. Observer and Equipment Detail

Date	L _{PAB}	B _{PAB}	Phase
2005 Dec. 23.8	61.1	-8.3	9.6
2006 Feb. 11.8	64.3	-5.2	16.2

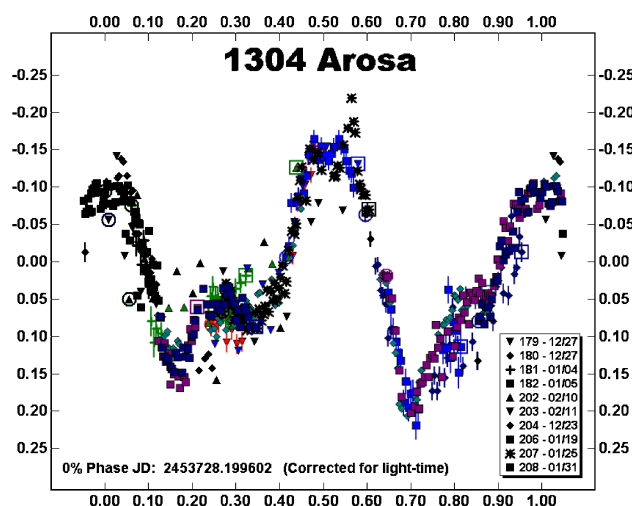
Table II. Phase Angle Bisector and Phase for 1304 Arosa

Independent analysis of the combined data was performed by Raoul Behrend using the code CourbRot (Behrend 2001) and by Thomas Bennett using MPO Canopus. A period of 7.7478 ± 0.0001 hr with an amplitude of 0.375 ± 0.011 mag was

derived by both programs. The origin of the rotational phase was chosen at 2005 Dec. 23.943 UT, light-time corrected.

References

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PERIOD DETERMINATION FOR 1484 POSTREMA

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Asteroid 1484 Postrema was observed on 5 nights in April thru May 2006. The lightcurve period and amplitude were 12.1923 ± 0.0005 hr and 0.20 ± 0.05 mag.

Observations of 1484 Postrema were carried out at Sandia View Observatory (MPC code H03). SVO is a roll-off roof design containing a permanently mounted 0.30m f/10 Meade SCT OTA and SBIG ST-10XME CCD camera mounted on a Bisque Paramount ME. Telescope control was handled thru *Astronomers Control Panel* (ACP) software, which handled automatic meridian flips and multiple target asteroids throughout the all night imaging sessions. The CCD was controlled via *MaxIm/DL* thru ACP. Imaging was done unfiltered to maximize signal-to-noise, with exposures of 120 seconds at bin 2 for an image scale of 0.95 arc

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

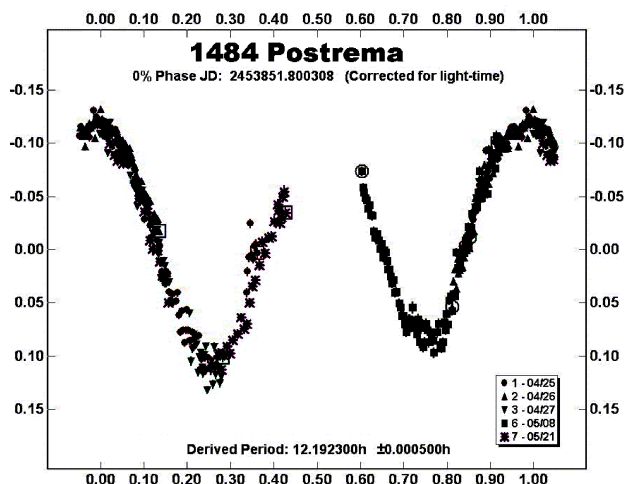
I wish to thank Brian D Warner for his advice and help through private emails as I was working my first minor planet lightcurve. His enthusiasm to help amateurs with scientific contributions from minor planet lightcurves is what got me hooked on this endeavor.

References

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THE LIGHTCURVES OF 1043 BEATE AND 1186 TURNERA

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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