

THE ROTATION PERIOD OF 1231 AURICULA

Colin Bembrick
Mt Tarana Observatory
PO Box 1537, Bathurst, NSW, AUSTRALIA
bembrick@ix.net.au

Greg Crawford
Bagnall Beach Observatory
Salamander Bay, NSW, AUSTRALIA

Bill Allen
Vintage Lane Observatory
Blenheim, NEW ZEALAND

(Received: 2008 July 14)

The synodic rotation period of minor planet 1231 Auricula was found to be 3.9816 ± 0.0006 h. Assuming a near equatorial aspect, the overall amplitude of 0.75 mag implies an axial ratio $a/b = 1.99$.

Minor planet 1231 Auricula (1931 TE2) was discovered by K. Reinmuth at Heidelberg in October, 1931. The diameter is quoted as 22 ± 4 km and the albedo is 0.084 (Guide 2002). It is an inner main-belt asteroid. No lightcurve data were found in the latest lists of Harris *et al.* (2008).

The observations in 2008 were conducted from three sites, one in New Zealand and two in Australia. The locations of these sites are listed in Bembrick *et al.* (2004). All observations were made using unfiltered differential photometry and exposures were adjusted so that 1% precision was achieved in most cases. All data were light-time corrected. The aspect data (Table I) also show the percentage of the lightcurve observed each night. PAB is the Phase Angle Bisector. All period analysis was carried out using the *Peranso* software (Vanmunster, 2006). The composite lightcurve for 1231 Auricula (Figure 1) displays a simple bi-modal shape with an overall amplitude of 0.75 mag. The synodic period of 3.9816 ± 0.0006 h is a secure result. More than one rotation was

observed on a majority of nights. Assuming a near-equatorial aspect, the amplitude implies an axial ratio $a/b = 1.99$.

References

Bembrick, C.S., Richards, T., Bolt, G., Pereghy, B., Higgins, D. and Allen, W.H. (2004). “172 Baucis – A Slow Rotator”. *Minor Planet Bulletin*, **31**, 51-52.

GUIDE version 8. (2002) <http://www.projectpluto.com>

Harris, A.W., Warner, B.D., and Pravec, P. (2008). “Minor Planet Lightcurve Parameters”. Updated March, 2008. <http://www.minorplanetobserver.com/astlc/LightcurveParameters.htm>

Vanmunster, T. (2006). *Peranso* ver 2.0. <http://www.peranso.com>

UT Date	PAB	PAB	Phase	%Phase
	Long	Lat	Angle	Coverage
2008 Apr 01	203.0	-09.5	7.2	157
2008 Apr 04	203.0	-09.7	6.3	72
2008 Apr 09	203.0	-10.0	5.3	156
2008 Apr 10	203.1	-10.0	5.2	138
2008 Apr 11	203.2	-10.1	5.1	126
2008 Apr 12	203.2	-10.2	5.1	102

Table I. Aspect data for Auricula in 2008.

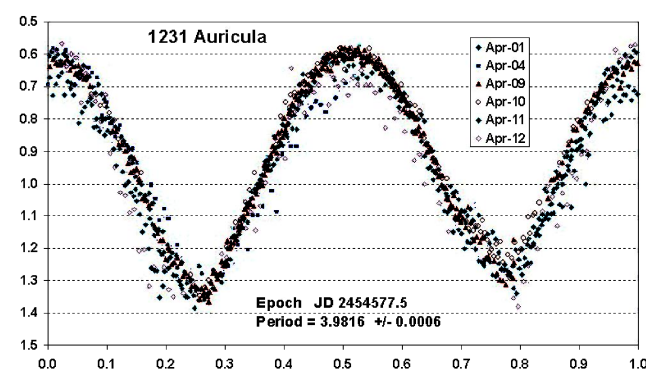


Figure 1. Composite Lightcurve in 2008

MINOR PLANET LIGHTCURVE ANALYSIS OF 1157 ARABIA AND 1836 KOMAROV

Peter Caspari
BDI Observatory
PO Box 194 Regents Park
NSW 2143, AUSTRALIA
pcaspa@hotmail.com

(Received: 2008 July 15)

Minor planet 1157 Arabia was observed over eight nights in 2008 May and June and 1836 Komarov was observed over five nights in 2008 June and July. Rotational periods of 15.225 h with an amplitude of 0.35 mag and 9.695 h with an amplitude of 0.55 mag, respectively, were determined.

BDI Observatory is located 22 km south of Sydney, Australia. The equipment used was a 0.2-m f/6 Newtonian with an SAC-8II CCD

camera at prime focus. A typical session lasted from 2.5 to 4 hours. *Astrovideo* was used to capture the unfiltered images, which were dark and flat corrected. Automatic stacking was performed using *DeepSkyStacker* and custom written software. Stacking was required to prevent saturation and to keep the image in the linear portion of the camera's response curve. The resulting images were measured using *MPO Canopus* (Warner 2008a), which uses differential aperture photometry to determine the values used for analysis.

1157 Arabia This asteroid is a main-belt object with an assumed diameter of 65.9 km based on an assumed albedo of 0.04 (Gray 2008). It was selected as a result of importing lightcurve data from the Minor Planet Center's "Minor Planet Lightcurve Parameters" and CALL's "Lightcurve Parameters" (Harris *et al.* 2008) into a data base. The data base was then queried for the brightest minor planet that had no known period and was in a favourable location for BDI Observatory considering light pollution and obstructions. Raoul Behrend's website (Behrend 2008) was also considered. The lightcurves exhibits a typical bimodal curve. *MPO Canopus* was used to determine a period of 15.225 ± 0.005 h and an estimated peak-to-peak amplitude of 0.35 mag.

1836 Komarov. This is a main-belt object with an assumed diameter of 36.2 km based on an assumed albedo of 0.04 (Gray 2008). This target was selected from the CALL's lightcurve targets page (Warner 2008b) since it was relatively bright and in a favourable location for BDI Observatory. The target had no known period. The lightcurve exhibits a typical bimodal curve. *MPO Canopus* was used to determine a period of 9.695 ± 0.005 h and an estimated peak-to-peak amplitude of 0.55 mag.

References

Behrend, R. (2008). Observatoire de Geneve web site
http://obswww.unige.ch/~behrend/page_cou.html

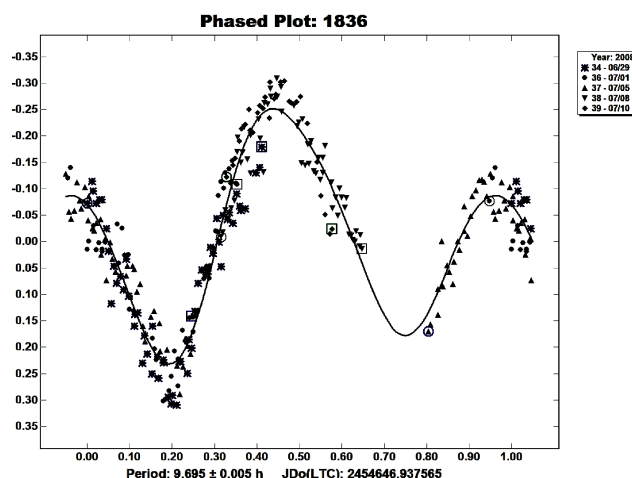
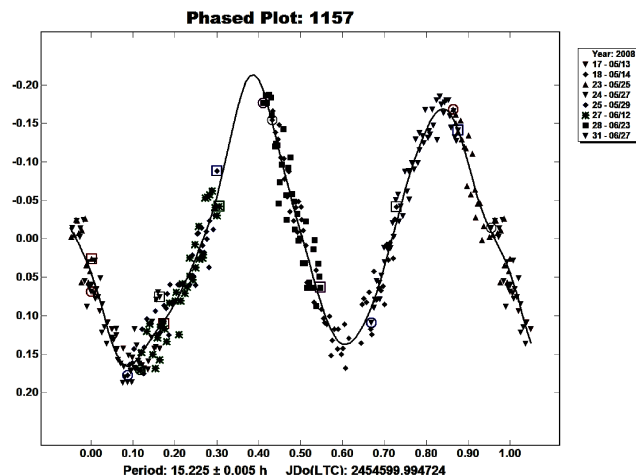
Gray, B. (2008). *Guide* software v8. Project Pluto, Bowdoinham, Maine.

Harris, A.W. and Warner, B.D. (2006). "Minor Planet Lightcurve Parameters". Updated March 14 2006.
<http://cfa-www.harvard.edu/iau/lists/LightcurveDat.html>

Harris, A.W., Warner, B.D., and Pravec, P. (2008). "Lightcurve Parameters", on Collaborative Asteroid Lightcurve Link (CALL) web site.
<http://www.minorplanetobserver.com/astlc/LightcurveParameters.htm>

Warner, B.D. (2008a). *MPO Canopus* v9.4.0.3. Bdw Publishing, Colorado Springs, CO.

Warner, B.D. (2008b) "Potential Light Curve Targets 2008 July-September".
http://www.minorplanetobserver.com/astlc/targets_3q_2008.htm



LIGHTCURVE PHOTOMETRY OPPORTUNITIES: OCTOBER-DECEMBER 2008

Brian D. Warner
 Palmer Divide Observatory/Space Science Institute
 17995 Bakers Farm Rd.
 Colorado Springs, CO 80908 USA
brian@MinorPlanetObserver.com

Alan W. Harris
 Space Science Institute
 La Canada, CA 91011-3364 USA

Petr Pravec
 Astronomical Institute
 CZ-25165 Ondrejov, CZECH REPUBLIC

Josef Durech
 Astronomical Institute
 Charles University in Prague
 18000 Prague, CZECH REPUBLIC
durech@sirrah.troja.mff.cuni.cz

Lance A.M. Benner
 Jet Propulsion Laboratory
 Pasadena, CA 91109-8099 USA
lance@reason.jpl.nasa.gov

We present here four lists of "targets of opportunity" for the period 2008 October-December. The first list is those asteroids reaching a favorable apparition during this period, are <15m at brightest, and have either no or poorly constrained lightcurve parameters. By "favorable" we mean the asteroid is unusually brighter than at other times and, in many cases, may not be so for many years. The goal for these asteroids is to find a well-determined rotation rate. Don't hesitate to solicit help from other observers at widely spread longitudes should the initial findings show that a single station may not be able to finish the job.

The Low Phase Angle list includes asteroids that reach very low phase angles. Getting accurate, calibrated measurements (usually V band) at or very near the day of opposition can provide important information for those studying the "opposition effect", which is when objects near opposition brighten more than simple geometry would predict.