

on these two objects is ongoing. This shows the importance of scanning your images for other objects other than your target.

6354 Vangelis

Vangelis is a main-belt asteroid discovered by E. Delporte on April 3, 1934. It is named for the Greek composer Vangelis Papathanassiou. In addition to numerous studio albums and scores for theater and ballet, Vangelis has also composed numerous film soundtracks. He won an Oscar for Best Original Score for *Chariots of Fire* (1981). Although the asteroid was suggested on the CALL Website, it was really selected because of the author's fondness for Vangelis' music. On February 22 and March 3, 2003, 140 observations were obtained to derive the synodic rotational period of 4.115 ± 0.005 hours with an amplitude of 0.40 ± 0.04 magnitude. On both nights, the entire rotational period was observed with additional overlap. However, the data points are not as dense because the asteroid occasionally passed too near a star for measurement. Vangelis' H value suggests that the asteroid is 27 km in diameter.

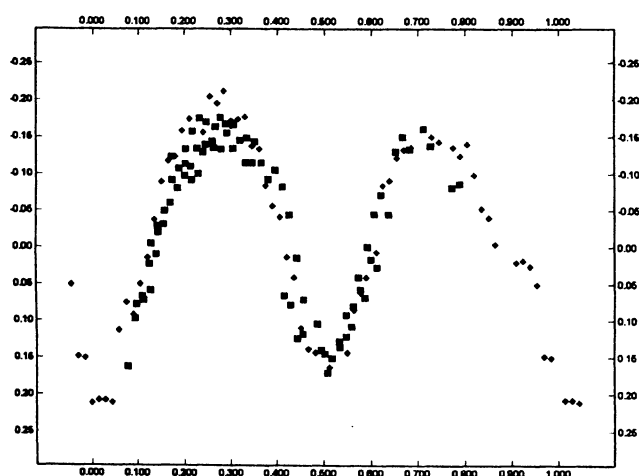


Figure 5: Lightcurve of 6354 Vangelis based upon a derived period of $4.115 \pm .005$ hours.

Acknowledgements

Many thanks to Brian Warner for his continuing work and enhancements to the software program "Canopus" which makes it possible for amateur astronomers to analyze and collaborate on asteroid rotational period projects and for maintaining the CALL Web site which helps coordinate collaborative projects between amateur astronomers.

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LIGHTCURVE PHOTOMETRY OF ASTEROID 808 MERXIA

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This is a report on a lightcurve measurement project at Antelope Hills Observatory and Starlight Farm Observatory. Observations for this project were carried out for a science fair project by high school student Janel Brown. Asteroid 808 Merxia was found to have a synodic period of $30.631 \text{ hours} \pm 0.001 \text{ hours}$ and an amplitude of 0.81 ± 0.02 magnitude.

The Observatories and Equipment

Antelope Hills Observatory is located near Bennett, Colorado at an elevation of 1740 meters. The observatory has been designated MPC code H09. The equipment and instrumentation of Antelope Hills Observatory may be found in Koff (2003).

Starlight Farm Observatory is located in Barnesville, Maryland at an elevation of 150 meters at W $77^{\circ}22'$ N $39^{\circ}12'$. The observatory utilizes an 0.28-m Schmidt-Cassegrain telescope operated at f/6.3, with an SBIG ST7-E camera. Details can be found at www.MenkesScientific.com

Procedure

The project originated at Antelope Hills Observatory. The target was selected by J. Brown from the "Potential Lightcurve Targets" on the CALL website (Warner, 2002), and further refined as one for which no lightcurve data had been previously reported (Harris, 1997).

The images taken at Antelope Hills were obtained in unfiltered light. The differential photometry was measured using the program "Canopus" by Brian Warner, which uses aperture photometry. Magnitudes were calculated using reference stars from the USNO-A 2.0 catalog. Comparison stars differed from night-to-night due to movement of the asteroid. Lightcurves were prepared using "Canopus", based on the method developed by Dr. Alan Harris (Harris et al, 1989). This program compensates for night-to-night comparison star variation by manually shifting individual night's magnitude scales to obtain a best fit.

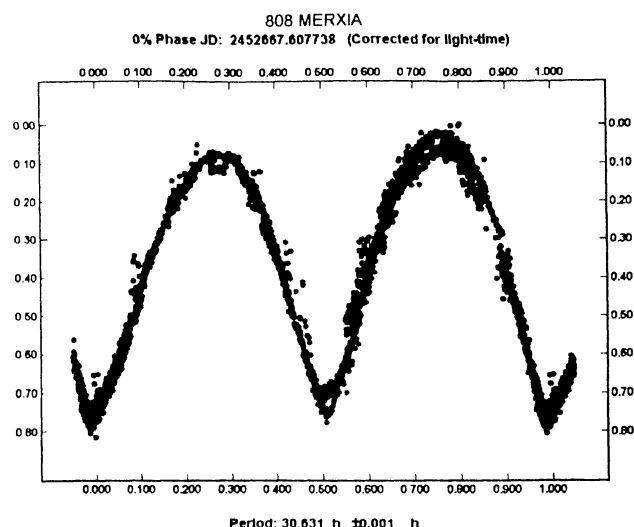


Figure 1. Lightcurve of 808 Merxia, based on a period of 30.631 $\pm$ 0.001 hours. Ordinate is relative magnitude.

The data from "Canopus" was transferred to Microsoft Excel for independent analysis by Brown. The data was curve fit by Brown, and the resulting period was in agreement with that determined by Koff.

The results were posted to the CALL website, and at that time it was noted that J. Menke had also observed the asteroid. After contact between the parties, it was decided to merge the data. The Starlight Farm Observatory observations were made unfiltered, but with a set of V filtered measurements taken nightly of the target field and a Landolt standard field. The V filter measurements were used to adjust for night-to-night variations in the comparison stars. MaxImDL was used for image measurement, and an Excel spreadsheet was used for the analysis. The combined data extended of the observational interval.

Observations and Results

Observations were made on fifteen nights during the period from December 27, 2002 to February 5, 2003. During the period of the investigation, the phase angle dropped from 13.1 degrees to 2.8 degrees at opposition and then rose to 6.87 degrees. At Antelope Hills, the image integration times were two minutes each. Images were taken at 2.5-minute intervals. Dark frames and flat fields were used to calibrate each image. At Starlight Farm, the image integration times were 1 minute each taken in immediate sequence (delay and downloading were approximately 17 seconds). A total of 2754 observations were used in the solution.

Figure 1 shows the resulting lightcurve. The zero point of the curve is J.D. 2452667.60774. The synodic period was determined to be 30.631 hours with a formal error of $\pm$ 0.001 hours. The amplitude was 0.81 ± 0.02 magnitude. The mean measured magnitude was 13.1 magnitude, which should be considered an instrumental magnitude.

Acknowledgments

Many thanks to Brian Warner for his continuing work on the CALL website and the program "Canopus", which has made it possible for amateurs to analyze and share lightcurve data.

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LIGHTCURVE ANALYSIS FOR 5468 HAMATONBETSU: INSIGHTS INTO MERGING COLLABORATIVE DATA

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The authors started work on 5468 Hamatonbetsu independently in early 2003 March. We formed a collaboration that eventually led to the determination of the synodic period and amplitude of the lightcurve for the asteroid, 42.02 ± 0.05 h, 0.43 ± 0.03 m. During the study we dealt with several issues commonly encountered during collaborations, such as merging data from multiple sessions (and observatories) for long (>24 hour) periods. These issues and how we resolved them are discussed.

Data Acquisition and Lightcurve Analysis

5468 Hamatonbetsu was discovered by M. Mukai and M. Takeishi at Kagoshima on 1988 January 16. It has carried the designations 1962 XH, 1969 FL, 1985 QQ₆, and 1988 BK. The name is after the town where Takeishi lives and is in honor for the community's support for the astronomical activities of the discoverers and for the surrounding area, which is a registered waterfowl habitat (Schmadel 1999).

The IRAS survey (Tedesco et al. 1989) gives an effective diameter of 22.13 ± 1.3 km, a mean albedo of 0.0507 ± 0.007 , and an absolute magnitude (H) of 12.13. Note that the IAU MPCORB database (MPC 2003) gives an absolute magnitude of 11.70. The primary