

LIGHTCURVES AND DERIVED ROTATION PERIODS FOR 18 MELPOMENE, 38 LEDA, AND 465 ALEKTO

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From new lightcurves obtained near their 2012 oppositions rotation periods and amplitudes are found for 18 Melpomene 11.571 ± 0.001 hours, 0.34 ± 0.02 magnitudes at phase angles 26 to 28 degrees; 38 Leda 12.837 ± 0.001 hours, 0.14 ± 0.02 magnitudes; 465 Alekto 10.938 ± 0.001 hours with three very unequal maxima, 0.12 ± 0.02 magnitudes.

All observations reported here were made at the Organ Mesa Observatory using a Meade 35-cm LX-200 GPS Schmidt-Cassegrain (SCT), SBIG STL-1001E CCD, red filter for bright 18 Melpomene, clear filter for the other targets. Exposures were unguided. Analysis used differential photometry only. Image measurement and lightcurve analysis were done by *MPO Canopus*. Because of the large number of data points, the data for the lightcurves presented here have been binned in sets of three points with a maximum time interval between points no greater than 5 minutes.

18 Melpomene. Warner et al. (2012) state a secure synodic rotation period of 11.570 hours based on several consistent published values. In addition Torppa et al. (2003) presented a lightcurve inversion model. J. Durech (2012, personal communication) stated that this model is not fully reliable, and for this reason is not presented on the DAMIT website (<http://astro.troja.mff.cuni.cz/projects/asteroids3D>). To provide data to improve the Torppa et al. (2003) model, observations were obtained, all of them after opposition at phase angles 26 to 28 degrees, on 14 nights 2012 Aug. 29 - Sept. 24. These provide full phase coverage and a good fit to an 11.571 ± 0.001 hour rotation period with amplitude 0.34 ± 0.02 magnitudes. This is consistent with previous published values.

38 Leda. Warner et al. (2012) state a secure synodic rotation period of 12.838 hours based on several consistent published values. To provide additional data for a lightcurve inversion model, observations were obtained on 7 nights 2012 June 4 - 29. These provide full phase coverage and a good fit to a 12.837 ± 0.001 hour rotation period with amplitude 0.14 ± 0.02 magnitudes. This is consistent with previous published values.

465 Alekto. Warner et al. (2012) do not list a previously published rotation period. Observations were obtained on 9 nights 2012 Aug. 21 - Oct. 4. These provide full phase coverage and a good fit to a 10.938 ± 0.001 hour rotation period with amplitude 0.12 ± 0.02 magnitudes. The lightcurve is irregular with three maxima per cycle which are nearly evenly spaced in time but very unequal in height.

References

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Warner, B. D., Harris, A. W., and Pravec, P. (2012). "Asteroid Lightcurve Data File, June 24, 2012."

<http://www.minorplanet.info/lightcurvedatabase.html>

