only lightcurve observations obtained of 2010 NR1 since it quickly faded after discovery.

Based on 2010 NR1's large lightcurve amplitude of 1.8 mag., it is assumed that this object is that of a highly elongated body. From the 14 data points acquired of this object over the period of nearly an hour, it was determined that this object has a rotational period of 0.89 ± 0.04 h. 2010 NR1 has an H value of 21.9 (MPC), which places it in the range of 110 to 240 meters, depending on the assumed albedo. With a rotational period of 0.89 ± 0.04 h, this object is likely that of a body that is "strength-dominated", e.g., a monolithic body, rather than that of a "rubble pile" or "gravitationally-bound" asteroid.

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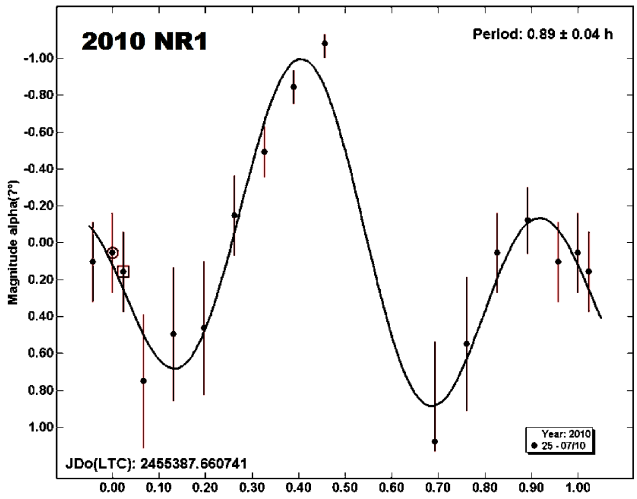

ROTATION PERIOD DETERMINATION FOR 2375 RADEK

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A synodic rotation period of 16.875 ± 0.001 h and amplitude of 0.20 ± 0.01 mag were determined for the asteroid 2375 Radek from unfiltered CCD photometric observations carried out at two locations, Belgrade, Serbia, and Las Cruces, NM, USA.

2375 Radek is a main-belt asteroid discovered in 1975 by L. Kohoutek in Bergedorf. Prior to our work no results for the rotation period of this asteroid were known. Sada et al. (2005) reported an unsuccessful attempt to find an unambiguous period from their 2004 observations. The object was favorably suited for photometric observations in 2010 April and May when it reached V~14.1 in opposition on April 29. It was listed as a potential lightcurve target in the period 2010 April-June on the CALL web site (Warner and Harris, 2010). Benishek started the observations on 2010 April 8 at the Belgrade Astronomical Observatory employing a 0.4-m SCT operating at f/10 with an unguided SBIG ST-10 XME CCD camera. Pilcher at Organ Mesa Observatory joined the observations on 2010 April 21 using a 0.35-m SCT operating at f/10 and equipped with an unguided SBIG STL-1001E CCD camera. The object was observed over 9 nights until May 10. All observations were unfiltered.

The photometric reductions as well as the period analysis were performed using *MPO Canopus* software by BDW Publishing. Linkage of the individual data sets was achieved by adjusting instrumental magnitudes. The period analysis performed with all 9 sessions gives an unambiguous solution of P = 16.875 ± 0.001 h. The amplitude of 0.20 ± 0.01 mag was found from the composite bimodal lightcurve.

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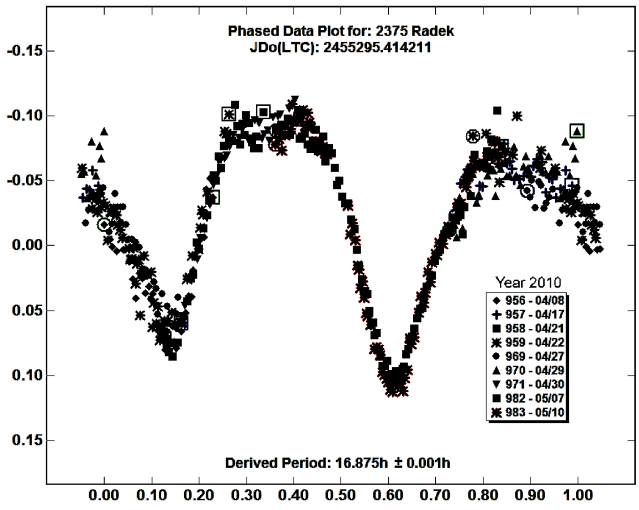

NEW LIGHTCURVES OF 40 HARMONIA AND 105 ARTEMIS

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Abstract. Lightcurves obtained 2010 May to July yield synodic rotation periods and amplitudes for: 40 Harmonia 8.909 ± 0.001 h, 0.18 ± 0.01 mag; and 105 Artemis 37.150 ± 0.001 h, 0.16 ± 0.02 mag.

All of these reported observations have been made at the Organ Mesa Observatory. Equipment consists of a 35 cm Meade LX200 GPS S-C, SBIG STL-1001E CCD, R filter, unguided, instrumental magnitudes only. The lightcurves have been drawn with the large number of data points acquired for each target in this study binned in sets of three with a maximum of five minutes between points.

40 Harmonia. Harris et. al. (2010) state a secure period of 8.910 hours based on several independent and mutually compatible studies. Additional lightcurves were obtained on 5 nights 2010 May 30 – June 14 to contribute to spin/shape modeling. These show a period 8.909 ± 0.001 hours, amplitude 0.18 ± 0.02 magnitudes, fully compatible with previous studies.

105 Artemis. The long period and irregular lightcurve caused several early observers to obtain widely differing periods. Tedesco (1979) obtained one 6 hour irregular lightcurve with amplitude 0.02 mag and guessed a period of 20 hours. Debehogne et. al. (1982) obtained a single lightcurve showing an increase of 0.05 mag in 4 hours. Schober et. al. (1994) published a period 16.84 h, amplitude 0.14 mag, with 0.08 mag scatter in the data. Shevchenko et. al. (2002) obtained a period 19.65 h. Tungalag et. al. (2002) combined all previous observations to obtain a period 18.54998 h. Le Crone et. al. (2004) obtained a period 17.80 h. Higgins (2010) obtained 2006 Mar. 18 – May 22 the most dense data set to date in support of Arecibo radar observations and found a period 37.2 ± 0.1 h. Higley et. al. (2008) used all the data listed above to obtain a spin/shape model with period 37.15506 h. New observations on 15 nights 2010 May 12 – July 10 show a period 37.150 ± 0.001 hours, amplitude 0.16 ± 0.02 magnitudes with an irregular lightcurve.

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