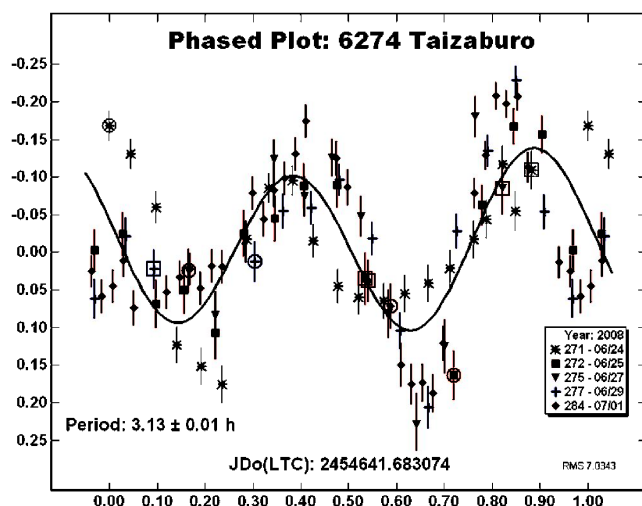
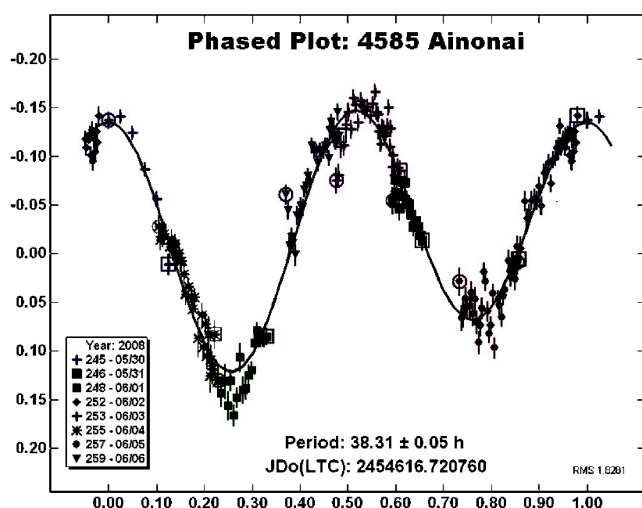
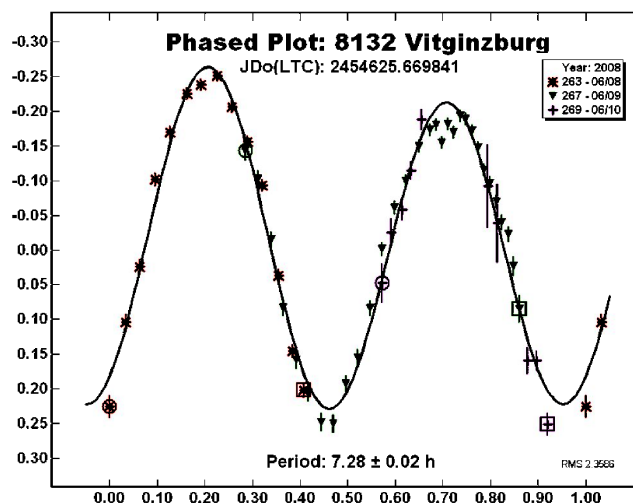
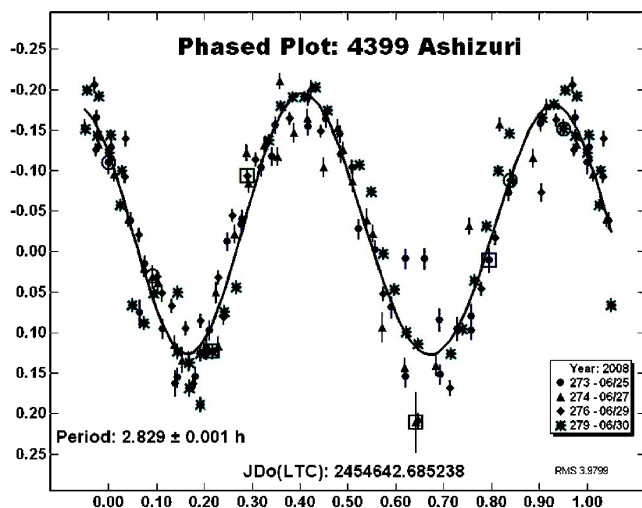




LIGHTCURVE OF BINARY MINOR PLANET 2005 NB7

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Lightcurve 2005 NB7 revealed binary characteristics with an orbital period of 15.267 ± 0.094 h with amplitude 0.26 ± 0.05 mag and a primary rotation period of 3.472 ± 0.003 h with amplitude 0.15 ± 0.05 mag. No secondary period was detected indicating tidal lock.

Photometric data were collected using a 36-cm Celestron C-14, an SBIG ST-10XME camera, and clear filter at Stonegate Observatory. The camera was binned 2x2 with a resulting image scale of 1.3 arc-seconds per pixel. Image exposures were 120 s at -15°C . All photometric data were obtained and analyzed using *MPO Canopus* (Warner 2007).

Data of the fast moving Potentially Hazardous Asteroid (PHA) 2005 NB7 were collected 2008 May 5, 6, and 7 during the very brief visibility zone resulting in 249 data points. The initial analysis did not include consideration as a binary system. Correspondence with Brian Warner indicated a binary discovery by P. Kusnirak et al. (CBET 1383). Subsequent analysis of the data using the *MPO Canopus* "Dual Period Search" indicated an orbital period of 15.267 ± 0.094 h with amplitude 0.26 ± 0.05 mag and a primary rotation period of 3.472 ± 0.003 h with amplitude 0.15 ± 0.05 mag. The periods agree closely with the P. Kusnirak et al. data for orbital period of 15.28 ± 0.01 h, amplitude of 0.09 mag and primary rotation period of 3.4883 ± 0.0001 h, amplitude 0.13 mag with a tidally locked secondary. Similarly, no secondary period was detected in the noisy data. The substantially larger amplitude of the orbital period can only be partially explained by the uncertainty of a very noisy data set.

Acknowledgments

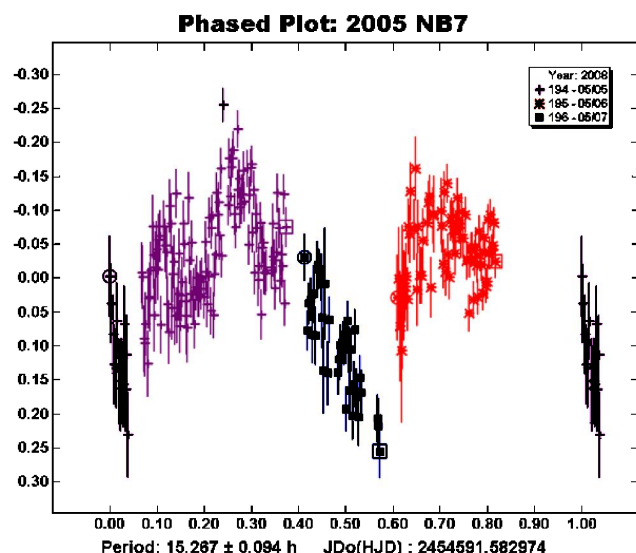
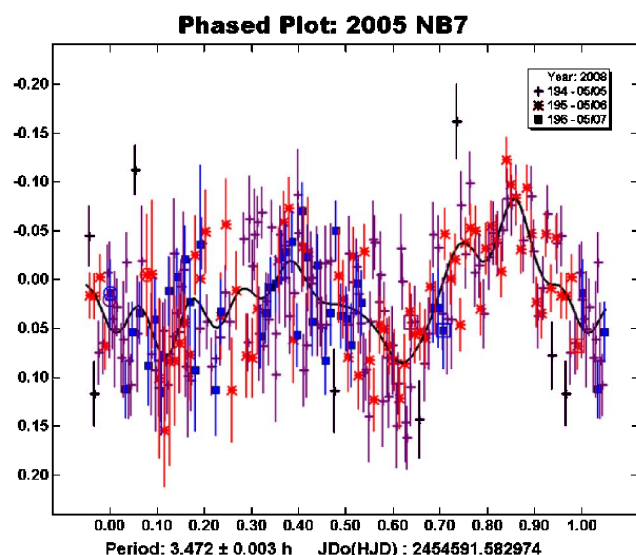
The author appreciates the help from Brian Warner in noting the binary nature of this asteroid, discovery references, and additional assistance.

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A STUDY OF THE TRINARY NEA 2001 SN263

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Projeto "Descobrimdo o Céu"

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The trinary NEA, 2001 SN263, was observed by the authors in 2008 February in Salvador, Bahia, Brazil. Based on the data obtained, the synodic period of the primary body was estimated to be 3.20 ± 0.01 h with a lightcurve amplitude of 0.27 ± 0.07 mag. The orbital period of the smaller satellite (0.4 Km) was estimated to be 46.1 ± 0.3 h. The NIR spectrum suggests the object is of type C according to DeMeo classification. Lance, a CO3 type meteorite, is the best analogous meteorite.

The near-Earth asteroid (NEA), (153591) 2001 SN263, which belongs to the Amor dynamic group, was observed by the Arecibo station during 16 days in 2008 February. These observations identified the asteroid as being a triple system. Preliminary data reductions suggest that the components have diameters of 2 km, 1 km, and 0.4 km. The orbit of the larger satellite has a semi-major axis > 15 km and orbital period of 15 days, while the orbit of the smaller satellite has a semi-major axis of ~ 4 km and orbital period of < 2 d. The larger satellite does not appear to be tidally-locked with its orbit. (Nolan *et al.* 2008).

Because of favorable viewing circumstances, this NEA was chosen to be observed by the "Discovering the Sky" project. Observations were carried out between 2008 February 8 and 11 UT in order to determine the synodic period of the primary. We used a 0.3-m Meade LX200 GPS telescope, operating at $f/3.3$, combined with a CCD SBIG ST-7XME. The 15-second exposures were through a clear filter and spaced at one-minute intervals. This resulted in an SNR of ~ 100 when using a photometric aperture of $\sim 1.5 \times$ FWHM of nearby non-saturated stars. All images were processed with bias, dark, and flat-field images. Period analysis was done on 280 data points using the Fourier analysis routines in *MPO Canopus* v9.3.0.1, which found a period of 3.20 ± 0.01 h and amplitude of 0.27 ± 0.07 mag (Fig 1). This compares with 3.4250 ± 0.002 h and 0.15 ± 0.02 mag (Higgins 2008) and 3.4251 ± 0.002 h and 0.10 ± 0.05 mag (Oey 2008). While all three are similar, they disagree significantly with the results published by Strajnik (2008) of 5.1900 ± 0.0002 h.

Two mutual events were seen in the observations on February 9 and 10 UT. They may be due to an eclipse of one of the satellites by the primary (Fig. 2) or the transit of a satellite across the primary body disc of the system 2001 SN263 (Fig. 3). The first event showed a drop of 0.63 ± 0.05 mag and duration of 20 min while the second ("transit") showed a drop of 0.92 ± 0.07 mag and duration of ~ 25 min. Each was similar to those observed in eclipsing double star systems in equivalents orbital phases (Hall, 2005). Assuming the two events were due to the