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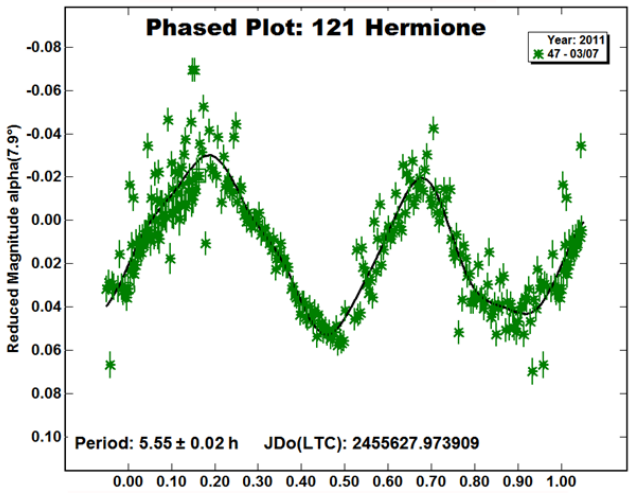

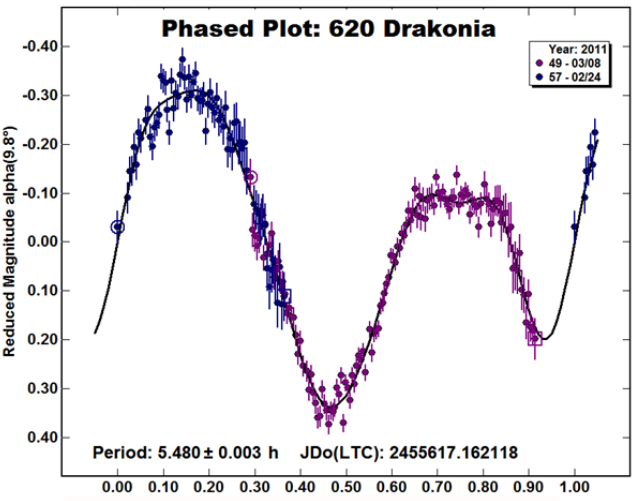

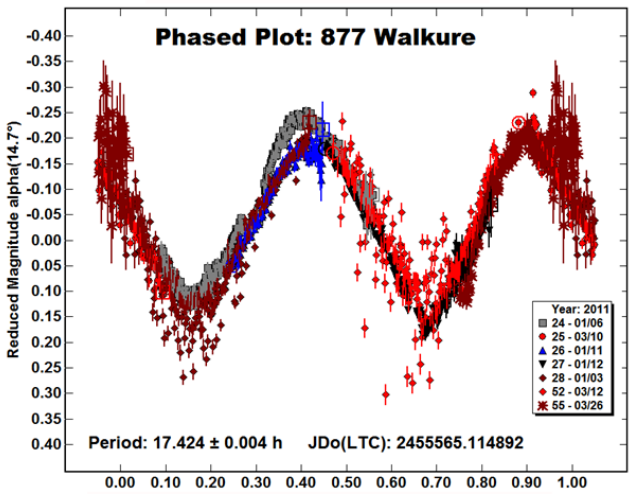

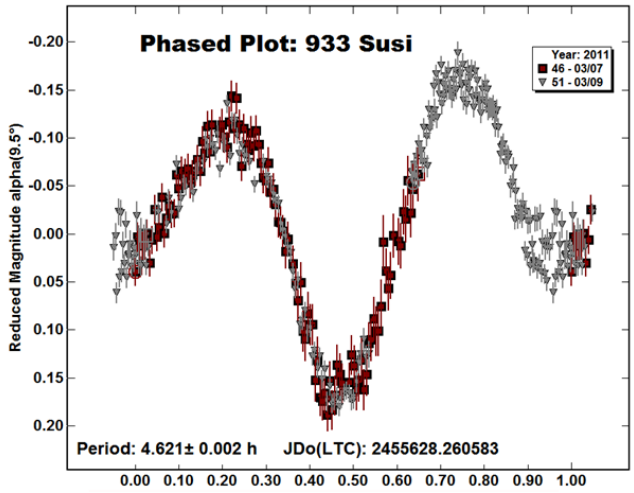

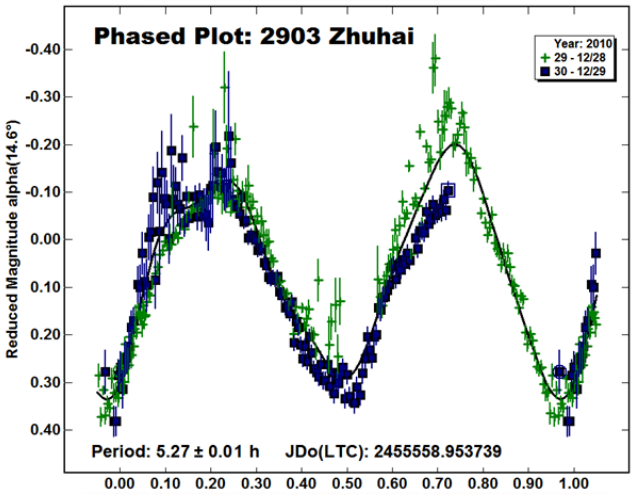

PERIOD DETERMINATION FOR 819 BARNARDIANA

Eduardo Manuel Alvarez
OLASU
Costanera Sur 559, Salto 50.000, URUGUAY
olasu@adinet.com.uy

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Lightcurve analysis for 819 Barnardiana was performed from observations during its 2011 opposition. The synodic rotation period was found to be 66.70 ± 0.01 h and the lightcurve amplitude was 0.82 ± 0.06 mag.

Edward Emerson Barnard was one of the great observational amateur astronomers. Among many important discoveries, in 1892 he was the first to report Jupiter's fifth moon, Amalthea (the first known after the four Galileans), and in 1916 he discovered the star with the fastest known proper motion and subsequently named "Barnard's Star." Barnard was honored by the naming of asteroid 819 Barnardiana, also discovered in 1916, by Max Wolf, the pioneer of the systematic use of photography in astronomy.

819 Barnardiana was one of the recommended asteroids in the "Potential Lightcurve Targets 2011 April - June" included on the Collaborative Asteroid Lightcurve Link (CALL) web-site (Warner, 2011), where it listed as having no known lightcurve parameters. Unfiltered CCD photometric images were taken at Observatorio Los Algarrobos, Salto, Uruguay (MPC Code I38) from 2011 late-May to mid-June using a 0.3-m Meade LX-200R f/10 working with a 0.63 focal reducer. The CCD imager was a QSI 516wsg NABG with a 1536 x 1024 array of 9-micron pixels. 2x2 binning was used, yielding an image scale of 1.9 arcseconds per pixel. Exposures were 120 s working at –10C. Autoguiding was done by means of a Lodestar camera and *PHD Guiding* software (Stark Labs) version v1.12. All images were dark and flat field corrected and then measured using *MPO Canopus* version 10.2.0.2 (Bdw Publishing) with a differential photometry technique. The data were light-time corrected. Period analysis was also done with *Canopus*, which incorporates the Fourier analysis algorithm developed by Harris et al. (1989).

From nearly 1500 data points obtained during eight sessions (totaling more than 50 h of observation and while the phase angle varied from 7.8º to 14.8º), the rotational period for 819 Barnardiana was determined to be 66.70 ± 0.01 h, along with a peak-to-peak amplitude of 0.82 ± 0.06 mag.

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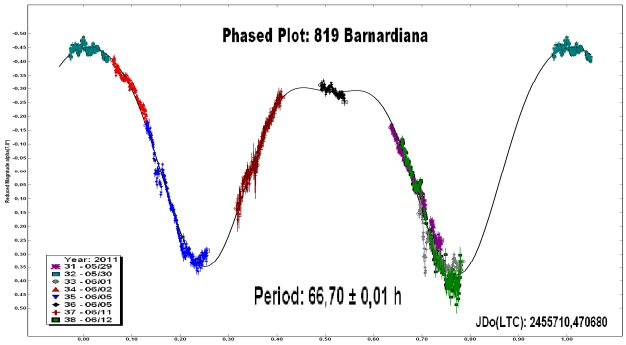

PHOTOMETRY OF ASTEROID 13241 BIYO

Raniero Albanesi
Associazione Romana Astrofili – Frasso Sabino
Via della Vaschetta, Rieti, Italy
centaurus@ebgroup.it

Massimo Calabresi
Associazione Romana Astrofili – Frasso Sabino
Via della Vaschetta, Rieti, Italy

Roberto Haver
Associazione Romana Astrofili – Frasso Sabino
Via della Vaschetta, Rieti, Italy

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Asteroid 13241 Biyo was observed at Virginio Cesarini Observatory (Italy) on 1 night in March 2011. The resulting lightcurve shows a synodic period of 2.199 ± 0.219 h and amplitude 0.99 ±0.03 mag. in the R band.

The choice of asteroid 13241 Biyo as a target was suggested from related astrometric work: we were analyzing the old DSS plate n° ER653 taken on 20/4/1991 in Siding Spring and we realized that the asteroid Biyo showed a variable width trail on the plate. So we decided to observe photometrically this object. Biyo is a main-belt asteroid discovered 1998 May 22 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro and up to now there are no lightcurve and period value published.

The observations were made at Virginio Cesarini Observatory (157 Frasso Sabino) located in Frasso Sabino village, 60 km north of Rome. The observatory is equipped with a cassegrain telescope 0.37-m diameter f 12 and f 6.8 (with focal reducer), CCD camera (Finger Lakes Proline PL 1301E-1) and classical Bessel B,V,R filters, plus Hα and clear. The images were taken on 6 March 2011 with f 6.8 focal ratio (1.31 arcsec for pixel) exposed for 180s in R and V band and reduced with bias, dark, and flats using Canopus ver.10.0 software. During the observations the camera temperature was set at -40 °C.

We acquired 49 images in the R band and 8 in the V band. In the Table I are indicated the comparison stars used for the differential photometry. The stars are taken from the 2MASS catalog and the conversion from JK magnitudes to BVRI is carried out by the Canopus software. The mean R and V magnitude results were R=17.31± 0.02 and V=17.78± 0.03 and the color indices yield V-R= 0.38±0.03, with no rotational variation detected within this precision.

The photometric data were analyzed by Peranso software version 2.5 and the PDM method; using the R data we found a synodic period P= 2.199 ± 0.219 h. Figure 1 displays the lightcurve data points in both V and R.

	2MASS	RA J2000 (FK5)	DE J2000 (FK5)	V mag	R mag
1	08232616+3134225	08 23 26.160	+31 34 22.59	12.868	12.601
2	08214790+3136569	08 21 47.905	+31 36 56.97	13.704	13.344
3	08215039+3124052	08 21 50.400	+31 24 05.27	13.879	13.427
4	08220147+3122446	08 22 01.472	+31 22 44.69	13.942	13.611
5	08231544+3126362	08 23 15.449	+31 26 36.23	14.170	13.877

Table I. Comparison Stars