A NEW LIGHTCURVE OF 357 NININA

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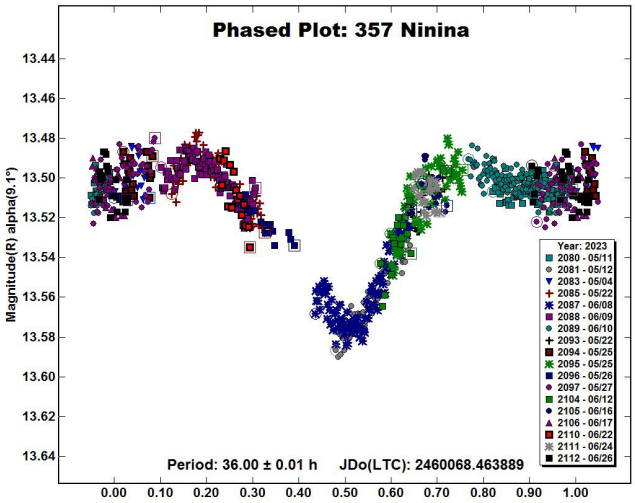
An international collaboration of observers from North America and Europe presents a lightcurve of the Earth commensurate asteroid 357 Ninina that shows a synodic rotation period 36.00 ± 0.01 hours, amplitude 0.08 ± 0.01 magnitudes with a single deep minimum in an otherwise nearly flat lightcurve.

Five previously published values of the rotation period of 357 Ninina, as presented in Warner et al. (2009), are all within 0.1 hours of the accepted best value of 35.983 hours. A new lightcurve was desired at a celestial longitude different from all those at which the previous observations were made to facilitate a lightcurve inversion study. With a rotation period almost exactly 1.5 Earth days, it is not possible to sample the entire lightcurve near a single opposition at a single observatory location. Therefore, the several authors of this paper, from both North America and Europe, agreed to collaborate. Their equipment is listed in Table I. Photometric image measurement and lightcurve construction were with *MPO Canopus* software with calibration star magnitudes for solar colored stars from the CMC15 catalog reduced to the Cousins R band. Zero-point adjustments of a few × 0.01 magnitude were made for best fit. To reduce the number of points on the lightcurves and make them easier to read, data points have been binned in sets of 3 with a maximum time difference of 5 minutes.

Eighteen sessions 2023 May 4 - June 26 can be fitted to a lightcurve with period 36.00 +/- 0.01 hours, amplitude 0.08 +/- 0.01 magnitudes, with one deep minimum in each rotational cycle. The period is consistent with previously published periods. The monomodal lightcurve shape and small amplitude are encountered for many asteroids at near polar aspect. These new data will be useful for future LI modeling.



Observatory (MPC code)	Telescope	CCD	Filter
Organ Mesa Observatory (G50)	0.35-m SCT f/10	SBIG STL-1001E	C
Astronomical Observatory, University of Siena (K54)	0.30-m MCT f/5.6	SBIG STL-6303e(bin 2x2)	Rc
Iota Scorpii(K78)	0.40-m RCT f/8	SBIG STXL-6303e (bin 2x2)	Rc
HOB Astronomical Observatory (L63)	0.20-m SCT f/6.0	ATIK 383L+	C
Osservatorio Astronomico Nastro Verde (C82)	0.35-m SCT f/6.3	SBIG ST10XME (bin 2x2)	C
GAMP (104)	0.60-m NRT f/4	Apogee Alta	Rc
Osservatorio Astronomico Margherita Hack (A57)	0.35-m SCT f/8.3	SBIG ST10XME (bin 2x2)	Rc

Table I. Observing Instrumentations. MCT: Maksutov-Cassegrain, NRT: Newtonian Reflector, RCT: Ritchey-Chretien, SCT: Schmidt-Cassegrain.