

PHOTOMETRY OF NEAs AT ABASTUMANI ASTROPHYSICAL OBSERVATORY, GEORGIA. R. Ya. Inasaridze¹, Yu. N. Krugly², I. E. Molotov³, V. Ayvazian¹, O. I. Kvaratskhelia¹, G. Kapanadze, V. A. Voropaev³ ¹E. Kharadze Abastumani Astrophysical Observatory, Ilia State University, G. Tsereteli str. 3, Tbilisi 0162, Georgia, innasaridze@yahoo.com, ²Institute of Astronomy of V.N. Karazin Kharkiv National University, Ukraine, ³Keldysh Institute of Applied Mathematics, RAS, Moscow, Russia

Introduction: The work is devoted to investigation of physical properties of near-Earth asteroids (NEAs) by carrying out regular photometric observations. It is a joint project between Abastumani Astrophysical Observatory and Institute of Astronomy of V.N. Karazin Kharkiv National University. The project is under support of the International Scientific Optical Network (ISON) which includes a wide cooperation of many observatories [1]. The aims of the study are to determine rotation periods of NEAs, to estimate their diameters, to detect and investigate binary systems between them, to determine pole orientations and to model their shapes, and to explore YORP and BYORP effects.

Observations: The photometric observations are carried out at the 70-cm Maksutov miniscus telescope of Abastumani Astrophysical Observatory. We use the CCD camera IMG-6303E with 3072 x 2048 pixels (9 x 9 μm) in a Newtonian focus (2.14 m, f/3) which has FOW 44 x 30 arcmin and scale of 0.87 arcsec. The observations are made in the *R*-filter of the Johnson-Cousins photometric system or in the unfiltered mode to attain a good accuracy of photometry which is typically in the range 0.01-0.03 mag [2]. Typically we carry out observations during 100-120 nights per year at the telescope.

The Abastumani observations are a part of the cooperative work within the Asteroid Search and Photometry Initiative (ASPIN) of the ISON network, which involves the following telescopes: 70 cm reflector at Chuguev-Kharkiv (MPC code 121), 70 cm at Lisnyky-Kiev (585), 80 cm at Mayaki-Odessa (583), 1 m at Simeiz-Crimea, 1 m at Tien-Shan Observatory (N42), 60 cm and 1.5 m at Maidanak-Tashkent (188), 2 m at Rozhen-Sofia (071), and 2.6 m at Nauchnij-Crimea (095) and several others with the smaller apertures [3].

Results: We present results of lightcurve observations of NEAs obtained in Abastumani Observatory in 2017. The observations of more than 50 NEAs were carried out during 110 nights. Among the observed targets there are: Potentially Hazardous Asteroids (PHA); very small NEAs with diameters smaller than 200-300 m; known binary NEAs or suspected ones to investigate parameters of the binary systems; targets of radar observations (by Arecibo and Goldstone radars); NEAs with detected or expected influence of the YORP effect (Yarkovsky-O'Keefe-Radzievskii-Paddack) [4]; well-investigated binary NEAs to search for BYORP (the so-called Binary-YORP effect) [5]; space mission objects like Phaethon which is the parent body of the Geminids meteors and is planned to be explored by DESTINY+ spacecraft of JAXA (Japan).

Outlook: Since June 2018 we expected to have the improved observational results after installing in the telescope's primary focus a new more-sensitive camera FLI ProLine PL4240 equipped with *BVR* filters of the Johnson-Cousins photometric system.

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