

ABSTRACT ONLY

PHYSICAL PROPERTIES OF NEOS OBTAINED BY THE IMPACTON PROJECT

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Near-Earth Objects (NEOs) are small bodies, asteroids and comets, in orbits that allow them to enter the Earth's neighborhood and, eventually, collide with our planet. In order to better quantify the threat that this population poses and also to elaborate mitigation strategies, it is of utmost importance a better knowledge of the physical properties of these bodies. To contribute to the international efforts in this direction the IMPACTON project (www.on.br/IMPACTON) set up a dedicated facility in a remote region in the northeast part of Brazil, denominated Observatório Astronômico do Sertão de Itaparica (OASI - code Y28, Itacuruba). Using the 1-m telescope of the OASI we observed nearly 150 NEOs since March 2012, deriving diverse physical properties of these objects. The used methodology consisted in acquiring CCD images of selected objects during one or more nights allowing to derive the position and/or the magnitude, in one or more filters. The images were reduced following standard procedures of flat-field correction and sky subtraction. Astrometric positions of newly discovered NEOs were used to improve their orbit, the data being routinely sent to the Minor Planet Center (MPC). Lightcurves were obtained using relative magnitudes between the object and a field star of similar magnitude. Applying then a Fourier analysis method (e.g. Harris et al. 1989) the rotational periods of about 50 NEOs, were obtained. For those objects observed over a full apparition, usually several months, it was also applied the lightcurve inversion method developed by Kaasalainen and Torppa (2001) and Kaasalainen et al. (2001), deriving the pole direction and shape for about 10 objects. It is remarkable that these results represent a more than 40% increase in the number of NEOs with known pole direction. The results obtained so far will be discussed in the light of their relevance to a better understanding of the origin and evolution of this interesting, as well as potentially hazardous, population. We will also discuss the need of an observational dedicated facility,

such as the OASI, in order to achieve statistically relevant results.

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