



Contribution ID: 42

Type: **Poster**

Physical properties of near-Earth objects and space debris from multiwavelength polarimetry at the Nordic Optical Telescope

Tuesday, 7 June 2022 12:54 (2 minutes)

We describe the future potential of multiwavelength polarimetric observations of natural near-Earth objects (NEOs) and artificial space-debris objects (SDs) at the Nordic Optical Telescope (NOT). Together with state-of-the-art theoretical modeling based on the first principles of physics, the forthcoming NOT observations promise to be a game-changer in the physical characterization of NEOs and SDs. First, empirical modeling of the observations allows for the estimation of the geometric albedos and taxonomic classes of the objects. Second, full-scale physics-based modeling of the observations constrains wavelength-scale compositional and structural characteristics for the surfaces of NEOs and SDs. Third, auxiliary photometric observations in the visible and infrared parts of the spectrum impose constraints on the sizes and geometric albedos of the objects, enhancing the accuracy of the aforescribed physics-based modeling. In particular, we describe the potential of the forthcoming NOT Transient Explorer instrument (NTE) for the polarimetric observations.

Primary authors: Prof. MUINONEN, Karri (University of Helsinki); VIRKKI, Anne (University of Helsinki; Finnish Geospatial Research Institute FGI, National Land Survey); Dr PENTTILÄ, Antti (University of Helsinki); Dr GRANVIK, Mikael (Department of Computer Science, Electrical and Space Engineering, Luleå University of Technology); Dr PELTONIEMI, Jouni (Finnish Geospatial Research Institute FGI, National Land Survey)

Presenter: VIRKKI, Anne (University of Helsinki; Finnish Geospatial Research Institute FGI, National Land Survey)