CONTROL ID: 3048384

TITLE: Volume uncertainty assessment method of asteroid models from disk-integrated visual photometry.

ABSTRACT BODY:
Abstract (2,250 Maximum Characters): The problem of asteroid models' uncertainty from photometric observations
remained unaddressed, though we have witnessed astounding improvements in numerical methods concerning asteroid shape and spin axis modelling. Combined with the mass estimates of good quality, e.g. the ones Gaia mission will provide for some asteroids, reliable volumes with realistic uncertainties are crucial when deriving the densities. In this work we propose a method of asteroid models' parameters uncertainty assessment leading to volume uncertainty. The method is based on creating the clones of the nominal model and accepting the ones inside the confidence level determined by the initial fit to observations. The clones population enables to convert deterministic asteroid models into stochastic ones. We applied the method to evaluate the uncertainty of available convex and non-convex models of (3) Juno, (9) Metis and (89) Julia.

Category: Asteroid Physical Characteristics:

Sub-Category: None

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INSTITUTIONS (ALL): 1. Astronomical Observatory Institute, Faculty of Physics, A. Mickiewicz University, Poznan, Poland.

Student Status (RC): Not a Student

Plain-Language Abstract Synopsis:
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Contributing Teams: (none)