CONTROL ID: 2565242

TITLE: A Novel and Simple Means to Estimate Asteroid Thermal Inertia

ABSTRACT BODY:

Abstract (2,250 Maximum Characters): Calculating accurate values of thermal inertia for asteroids is a difficult process requiring a shape model, thermal-infrared observations of the object obtained over broad ranges of rotation period and aspect angle, and detailed thermophysical modeling. Consequently, reliable thermal inertia values are currently available for relatively few asteroids. On the basis of simple asteroid thermal modeling we have developed an empirical relationship enabling the thermal inertia of an asteroid to be estimated given adequate measurements of its thermal-infrared continuum and knowledge of its spin vector. In particular, our thermal-inertia estimator can be applied to hundreds of objects in the WISE cryogenic archive (limited by the availability of spin vectors). To test the accuracy of our thermal-inertia estimator we have used it to estimate thermal inertia for near-Earth asteroids, main-belt asteroids, Centaurs, and trans-Neptunian objects with known thermal inertia values derived from detailed thermophysical modeling. In nearly all cases the estimates agree within the error bars with the values derived from thermophysical modeling.

CURRENT CATEGORY: Asteroid Physical Characteristics: Surfaces

CURRENT : None

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Contributing Teams: