CONTROL ID: 3048783

TITLE: Thermal properties of large main belt asteroids derived from Herschel PACS data

ABSTRACT BODY:
Abstract (2,250 Maximum Characters): One of the many aims of the Small Bodies: Near and Far project (SBNAF; see Müller et al. 2017arXiv171009161M) is to develop a database with IR observations taken from (space) observatories such as AKARI, IRAS, WISE, Spitzer, and Herschel. In some cases, Herschel PACS calibration data of asteroids required a more careful reduction strategy, and the resulting expert-reduced data products have been provided by SBNAF to the Herschel Science Archive. The IR data can then be used to derive physical and thermal properties from thermo-physical models (TPMs), which is yet another objective of the project.

Here we will present the TPM analysis of a set of ~10 main belt asteroids larger than 100 km in diameter with the aim of deriving their thermal inertias (so far, we know those of about twenty such objects). Some of our targets are so-called "Gaia perturbers", objects whose masses will become known thanks to the high precision of ESA's Gaia mission. We use available or newly derived shape models and benefit from the high photometric quality provided by the Herschel PACS 70-, 100- and 160-micron fluxes taken from the calibration program. Whenever available, we also use ground-based and AKARI, IRAS and WISE data. One key aspect we are interested in is how well TPM and shapes derived from inversion methods, including non-convex shape models from SAGE (Bartczak & Dudzinski 2018MNRAS.473.5050B) and/or ADAM (Viikinkoski et al. 2015A&A...576A...8V), can reproduce the highest-quality IR data and, conversely, to what extent we can use these data to assess the quality of the shapes models.

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Category: Asteroid Physical Characteristics:

Sub-Category: None

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Plain-Language Abstract Synopsis: We study the physical nature of the surface of large main belt asteroids by modelling high-quality infrared data from the Herschel Space Observatory. We expect the data to confirm the presence of very fine dust on these bodies, given their old age, and tell us something about the material.

Contributing Teams: (none)