



Herschel Observations of (21) Lutetia around the time of the Rosetta Flyby

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Abstract

Prior to and around ESA Rosetta's flyby of (21) Lutetia, a collaborative observation campaign using another ESA satellite, the ESA Herschel Space Observatory, was performed whereby Herschel's two photometers observed the asteroid in the far infrared, at wavelengths not covered by the Rosetta instruments. The Herschel observations, fed into a thermophysical model (TPM) using as input a flyby image based shape model (built upon Rosetta OSIRIS instrument observations) were further correlated with ~70 multi-wavelength (IRAS, ISO-VISIR, IRTF, Akari, ESO-TIMMI2, Spitzer-IRAC) observations of Lutetia. We confirm the albedo measured by Rosetta and derive a "true" H-mag value based upon the cross-sections of the asteroid observed from all aspect angles. From our measurements we find that (21) Lutetia has an extremely low thermal inertia as well as a very low surface temperature. In addition, we have been able to identify a hill/crater surface feature located on the asteroid's southern region not observed by Rosetta. We conclude that only through the merging of in-situ flyby based observations and remote sensing observations can a true global picture be obtained of this peculiar asteroid.