



The Near-Infrared Thermal Emission from the Nucleus of Comet 9P/Tempel 1

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The near-infrared thermal emission from the nucleus of Comet 9P/Tempel 1, measured by the HRI-IR instrument on the Deep Impact spacecraft, can be used to extract information about the surface temperature, emissivity in different wavelength regions, thermal inertia and degree of surface roughness on the nucleus. However, such work requires sophisticated thermophysical modeling and the results are sensitive to model assumptions. We report on past and current attempts to model and reproduce the observed thermal emission from Comet 9P/Tempel 1. In particular, we present novel simulations of rough terrains subjected to shadowing and self-heating effects, which suggest the importance of a hitherto neglected process in most models: lateral heat conduction. The implications of this for the interpretation of thermal emission from other atmosphereless Solar System bodies are discussed.