



Physical Properties of the Haumea Family from Herschel

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Abstract

We present thermal observations and results for 10 objects that are dynamically associated with the large TNO, Haumea. The data were acquired under the “TNOs are Cool” Herschel Key Programme (T. Mueller, PI). The targets are about evenly divided between those with IR spectra and/or colors consistent with the presence of water ice (postulated to be part of the Haumea collisional family [1]), and those lacking evidence of water ice [2]. Final reduction of the Herschel data is incomplete at this time, and only 2 objects have good Spitzer data, precluding us from giving results here.

Our goal is to test the hypothesis that the targets with water ice on their surfaces have albedos (and possibly diameters) that are distinct from those lacking surficial water ice. A positive outcome would strengthen the idea that the true Haumea family members can be identified based on their reflectance properties (in addition to their dynamical association with Haumea), and that dynamically associated TNOs lacking water ice are not family members. A negative outcome would suggest that the Haumea family might be significantly larger than currently thought, since it could well include dynamically associated objects that lack clear evidence of surficial water ice. If the latter is true, it could have significant implications for size of the parent body and formation scenarios.

If most of the targets are detected at adequate signal-to-noise ratio (SNR), we will use the data to perform the test just outlined. If not, we will present albedo and diameter results for those targets with clean detections, and explore why the detections lacked sufficient SNR, and draw whatever more limited conclusions are possible.

References

[1] Ragozzine, D. and M.E. Brown: Candidate members and age of the family of KBO 2003 EL61. *AJ* vol. 133, 2160, 2007.

[2] Snodgrass et al.: Characterisation of candidate members of Haumea’s family. *A&A* 511, A72, 2010