

Properties of the Planck coldest clumps in the Galaxy

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The all-sky Planck survey has discovered thousands clumps with dust temperatures $T_D < 18\text{K}$. Herschel/SPIRE and PACS observations of a subset of these clumps reveal a wealth of sub-structures and confirm the existence of cold dust structures with TD as low as 7K. This subset appears as the low-TD tail of the quiescent cores distribution found in infra-red dark clouds. Its study should shed a new light on the early stages of the elusive massive star-formation process. Results of the first observing runs at the Caltech Submillimeter Observatory will be presented, including

¹³CO(2-1) On-The-Fly maps of the environment of a few cold cores found with SPIRE within Planck clumps and observations of the $\text{HCO}^+(3-2)$ and $\text{N}_2\text{H}^+(3-2)$ lines at selected positions. Observations of the deuterated isotopologs, that specifically trace the existence of cold gas, have not started yet.

These observations probe the cold cores internal structure in conjunction with the dynamics of their filamentary environment.