

Molecular radio line observations of a galactic star forming cloud G82.65-02.00

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The Herschel space observatory open time key programme Galactic Cold Cores carried out thermal continuum emission observations of interstellar dust of 116 galactic fields that were selected based on the Planck Galactic Cold Clumps (PGCC) catalogue. The fields were mapped with Herschel PACS and SPIRE instruments at wavelengths from 100 to 500 μm .

We have studied one of the Herschel fields, a star forming cloud G82.65-2.00. The central region of the cloud is heavily fragmented and harbours a host of cold compact clumps, with some faint striations of cold dust seen at the outskirts of the central region. Preliminary CO observations showed that the field has an intriguing velocity structure with a prominent velocity gradient along the cloud. Based on both the Herschel and the CO observations, we have studied the velocity structure in detail, to quantify possible mass accretion rate onto the cloud, and study the properties of the cold clumps located in the cloud.

To support the preliminary observations, we carried out line observations of several molecular lines, including CO isotopologues, HCO^+ , HCN, SO, and CS. Our observations have revealed several kinematic components connected to the cloud and possible signs of mass accretion from the surrounding medium on the cloud. Both the Herschel and line observation have detected several cold and compact cores of which most are gravitationally unstable indicating possible star formation. In this presentation I will give a brief summary of our observations and present some of our results.