

Identifying star-forming cores ^{13}CO emission maps

由 ^{13}CO 發射譜線辨識分子雲中的恆星形成緻密氣體核

Multi-tracer surveys have revealed the hierarchical nature of molecular clouds, showing how high-density, small-scale features are always nested within more rarefied, larger envelopes. This structural hierarchy is, however, a non-trivial one: at any scale, there appear to be more high-density and compact 'clumps' than larger and less dense structures. The densest clumps in a cloud's hierarchy are compact cores, the seeds of star formation. We used an algorithm based on graph and clustering theory to identify gaseous structures in the CO Heterodyne Inner Milky Way Plane Survey (CHIMPS) emission maps. In this project, we aim to find the densest cores in this emission segmentation and match them with infra-red luminosities measured independently in the Herschel infrared Galactic Plane Survey (Hi-Gal).

*Infra-red emission (along with mass) is a proxy for star formation efficiency in molecular clouds.

*This project will be supervised by Dr. Rani (rani@ntnu.edu.tw). Please contact through email directly.

*Some basic knowledge in astronomical observation and python programming is preferable. This project requires full commitment during the summer (July and August). Interested students and start as early as possible.