

## Poster: The TOP-SCOPE survey of Planck Galactic Cold Clumps

- Tie Liu

Stars form in dense regions within molecular clouds, called pre-stellar cores (PSCs), which provide information on the initial conditions in the process of star formation. The low dust temperature ( $<14$  K) of Planck Galactic Cold Clumps (PGCCs) makes them likely to be pre-stellar objects or at the very initial stage of protostellar collapse. "TOP-SCOPE" are joint survey programs targeting at Planck Cold Clumps. "TOP", standing for "TRAO Observations of Planck cold clumps", aims at an unbiased CO/13CO survey of 2000 Planck Galactic Cold Clumps with the Taeduk Radio Astronomy Observatory 14-meter telescope. "SCOPE", standing for "SCUBA-2 Continuum Observations of Pre-protostellar Evolution", is a legacy survey using SCUBA-2 onboard of the James Clerk Maxwell Telescope (JCMT) at East Asia Observatory (EAO) to survey 1000 Planck galactic cold clumps at 850 micron. We are also actively developing follow-up observations with other ground-based telescopes (NRO 45-m, Effelsberg 100-m, IRAM 30-m, SMT, KVN, SMA, ALMA). We aim to statistically study the initial conditions of star formation and cloud evolution in various kinds of environments. I will present the progress and the future plans of this internationally collaborating project.

*Molecular Clouds*