Technical Page

Proposal Type:	Regular
General Category:	Astronomy
Sub-Category:	Spectroscopy
Observation Category:	Galactic
Total Time Requested:	228 Hours
Minimum Useful Time:	1 Hour

Proposal Title: Reveal the Transition from Atomic to Molecular ISM - A Sensitive Survey of HI Absorption in Planck Cores

ABSTRACT:

The transition from diffuse, atomic gas to dense, molecular gas is a key step in the life cycle of the ISM. The result of this transition sets the intial condition for star formation. The atomic ISM have been well studied by observing the HI 21cm line. The study of molecular ISM has been carried out mostly through tracers, especially CO. The transition phase, however, is unfriendly to either probe. We have studied this transition through HI narrow self-absorption (HINSA: Li and Goldsmith 2003). The analysis of HINSA provides a rare direct measurement of HI mixed with molecular gas and constrains the time scale of molecular cloud formation. In order to get a global picture of the HI-H2 transition in the Galaxy, we propose a sensitive, high spectral resolution HINSA survey of Planck cold cores. Combined with our CO survey, a systematic understanding will be achieved for the first time.

Name	Institution	E-mail	Phone	Student
Di Li	California Institude of Technology	dili@caltech.edu	8182926780	no

Remote Observing Request

- [X] Observer will travel to AO
- [ ] Remote Observing
- [ ] In Absentia (instructions to operator)

Instrument Setup

ALFA

Atmospheric Observation Instruments:

Special Equipment or setup: none

RFI Considerations

Frequency Ranges Planned

1225 - 1525