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Abstract:

High Galactic latitude (hereafter HGal), the rest of the 'iceberg', provides a new perspective of local ISM. In the 1980s, the striking discovery of far-infrared (FIR) cirrus, a 100-um extended filamentary structure at HGal, is probably in a transient state between atomic and molecular phases. Indeed, the molecular environment has been established in some cold clumps (i.e. PGCCs, defined from the Planck survey) due to our follow-up CO surveys with the Purple Mountain Observatory 13.7-m telescope. These clumps were thought to be the coldest and earliest sample for star formation. Therefore, we here propose a HINSA survey observation of HGal clumps and their host clouds, thirty-four tracking points are proposed to detect HI narrow absorption lines. Five OTF maps of the two largest and most massive clouds are proposed to give a panorama of HI distributions and dynamics. Combined with ~ 1 arcmin resolution of CO maps, these clouds enable us to have a glimpse of the 'bridge' connecting diffuse atomic hydrogen and dense molecular gas, improving our knowledge of the synthesis of H₂ from HI. Moreover, expected CO-free HI emission on the edge of CO clouds might help with the 'dark gas' problem.