[IM01] On-going Star Formation in the Starburst Galaxy NGC 253

민영철[1], S. Muller[2], S.-Y. Liu[2], 윤태석[3]
[1]한국천문연구원, [2]ASIAA, 대만, [3]경북대학교 천문대기과학과

The H_2S 2(2,0)-2(1,1) and SO 5(5)-4(4) transitions were observed simultanesously toward the starburst galaxy NGC 253 using the Submillimeter Array. Two H_2S emission peaks are found at positions ~ 2″ NE (30 pc) and ~ 5″ SW (80 pc) from the galactic center, associated with the circumnuclear disk and coinciding with the inner ring structure seen on the SiO map. SO emission is detected, weakly, only toward the NE. We derive H_2S column densities of ~ 4 and ~ 1 x 10^{15} cm^{-2} and SO column densities ~ 4 and < 1 x 10^{14} cm^{-2} toward the NE and SW peaks, respectively. The fractional abundances, relative to molecular hydrogen, are f ~ 1-4 x 10^{-8} and 4 x 10^{-9} for H_2S and SO, comparable with the values observed in Galactic massive star-forming cores. If the H_2S emission do trace the hot cores activity in the center of NGC 253, a rough comparison with the massive star forming region Orion KL indicates that several thousands of Orion KL-like cores may exist towards each of the H_2S peaks.

[IM02] A Catalogue of Infrared Dark Clouds: Starless or Starred Massive Core Candidates

김관정[1], 이창원[1], 김종수[1], 이영웅[1], Ballesteros-Pareds[2], Philip C. Myers[3]
[1]한국천문연구원, [2]UNAM, Mexic, [3]CfA, USA

We present a new catalog of 1870 InfraRed Dark Clouds (IRDCs) which were manually selected by using the darkness of the IRDCs caused by the dust extinction over the bright background Galactic plane in the mid-infrared (8.28㎛) MSX survey. Unlike the previous catalog (SJRC) published by Simon et al, our catalog better collects rather compact IRDCs surrounded over the bright Galactic background which were missed in the SJRC catalog. Nearly a half of the IRDCs in the catalog are found neither to be listed in SJRC catalog nor to be studied ever, and thus this catalog will complement a nearly full set of IRDCs with other catalogs, and give an excellent basis of the study of IRDCs. The existence of YSOs in the IRDCs was in detail examined using several catalogs containing such as methanol and Water masers, IRAS and Spitzer GLIMPSE point sources, and NVSS sources. About 44% of 1870 IRDCs are found to contain at least one YSO candidate while others are starless. We note that the 236 IRDCs have protostars (Class 0/I) and the ratio of [N(IRDC with protostars)]/[N(starless IRDCs)] is about 0.32 which is almost the same as that of low-mass cores (about 0.31). The half of the starred IRDCs have more than 1 YSO candidates. The IRDCs with more YSOs tend to be larger, more elongated, and more opaque.