

Q03a Survey of molecular clouds in the LMC by NANTEN: GMC properties and star formation

河村 晶子 (名大理), Miroslav Filipovic (University of Western Sydney), Lister Stevely-Smith (ATNF)、水野 陽治、南谷 哲宏、水野 範和、大西 利和、水野 亮、福井 康雄 (名大理)

The Large Magellanic Cloud (LMC) offers an ideal laboratory to study how the interstellar medium evolves and how stars are formed in a lower metallicity environment at an unrivaled closeness to us. It is known that young populous clusters like R136 are still being formed in the LMC, making it possible to study cluster formation. A large scale survey in CO ($J = 1-0$) toward the LMC has been carried out with NANTEN at Las Campanas Observatory, Chile, as has been introduced in the previous meetings. We identified 259 molecular clouds of which 146 are detected at more than two observing points. Comparisons of young clusters (e.g., Bica et al. 1996) and HII regions cataloged from $H\alpha$ (e.g., Davies et al. 1976) and radio continuum by Parkes (e.g., Filipovic et al. 1995) show 23 % of the 146 clouds are associated with both clusters and HII regions, 45 % only with HII regions and the rest, 32 %, show no evidence for massive star formation ("starless clouds"). We have further carried out a comparison of the CO clouds with radio continuum sources using the Australian Telescope Compact Array (ATCA). The detection limit of HII regions by ATCA is well below the flux of the Orion nebula. It is found that the starless clouds are not associated with candidates for HII regions according to the ATCA data either. This high ratio of starless GMCs is different from the GMCs within ~ 3 kpc from the Sun.