

A NEAR INFRARED SURVEY OF THE LMC

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We surveyed the central $3^\circ \times 6^\circ$ region of the Large Magellanic Cloud (LMC) with angular resolution of $10''.0$ at the J($1.25\mu\text{m}$), H($1.65\mu\text{m}$) and K' ($2.15\mu\text{m}$) bands. The observations were performed from Oct to Nov, 1994 at the Siding Spring Observatory. We used a 25 cm/F3.5 Newtonian telescope equipped with a 512x512 PtSi-Camera (Ueno et al. 1992). The plate scale was $4.''6 \times 6.''0/\text{pixel}$ and the total field of view was $40.'2 \times 52.'3$. The system was attached onto the Automated Patrol Telescope of the University of New South Wales. The limiting magnitudes of the survey were 13.6, 11.9, and 10.0 magnitude (3σ) at the J, H, and K' bands, respectively. The positions and the J, H, and K' magnitudes were derived for 1599 point sources whose S/N ratio were more than four at the K' -band. The dominant components of the sources are red super giants (RSG), luminous M-type giants and AGB stars in the LMC. The distributions of RSG, luminous giants and CO line flux are spatially different from each other. This supports the idea that the position of the active star forming region has changed during the past 10^8 years. The detected sources are cross-identified with the *IRAS* Point Source Catalog. Sixty-two of 680 *IRAS* sources in the region spatially coincide with the detected sources and the spectrum energy distributions from $1.25\mu\text{m}$ to $100\mu\text{m}$ were derived for these 62 sources. Half of them are well described by a black body spectrum, while the others show a flat or redder spectrum. These latter sources are supposed to be stars with dust envelopes.

References

Ueno, M., Ito, M., Kasaba, Y., & Sato, S. 1992, *SPIE*, **1762**, 423