A MODEL OF THE GALAXY FOR STAR COUNTS IN THE INFRARED

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We constructed a model for the Galaxy to reproduce near-infrared (J, H, K, bands) and mid-infrared 12 and 25 micron IRAS bands source counts for a given direction and sensitivity of detection. The Galaxy is conceived as being formed by two populations: a disk, with different scale heights for each spectral type, and a de Vaucouleurs spheroid. The interstellar extinction is considered to be proportional to the amount of gas along the line of sight; both neutral (HI) and molecular (H2) components were taken into account, using the HI density distribution of Burton & Gordon (1978) and the CO density distribution of Sanders et al.(1984) and Gordon & Burton (1976).

We investigated the presence of circumstellar dust shells around giant stars, using the sample of Hacking et al.(1985); the fraction of stars with infrared excess rises steeply beyond spectral type M4. To compute the absolute luminosity of these stars in the infrared we used a spherically symmetric model for the density and temperature of dust similar to that of Epchtein et al.(1990).

The model fits well the near-infrared and the 12 micron IRAS band source counts, but it fails at 25 micron due to the contamination of non-stellar galactic objects. The spiral arms of the Galaxy are detected on the isocounts maps.

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