height than the CO emission ($n_{cr} = 1.5 \times 10^3$ cm^{-3}), as will be expected if the higher density gas lies closer to the plane. Assuming that both transitions have similar beam filling factors and that there are not chemical gradients, we produced a density map of the galactic center by taking the ratio of their integrated line intensities.

The composite spectrum of the whole Galactic centre region shows two components: a narrow feature centered at $V_{LSR} = 50$ km/s about 90 km/s broad, and a broad feature centered at $V_{LSR} =$ 0 km/s with width ~ 250 km/s.

Comparison of the ratio I_{HCN}/I_{CO} for our Galaxy versus active galaxies has been performed convolving the data over different spatial scales. It shows that starburst galaxies seem to have: 1) more gas in the nucleus, as traced by the intensity of the CO emission, 2) denser gas in the nucleus, as traced by the I_{HCN}/I_{CO} ratio, and 3) more extended regions of dense gas.

ABOUT THE POSSIBILITY OF AN EXPLOSIVE EVENT IN THE LOCAL INTERSTELLAR MEDIUM (LISM)

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We review the main observational global characteristics of the LISM, which should be explained by a theory, either on the basis of a collision of a high velocity cloud with the galactic plane, or on the basis of an explosive event in the local arm. Assuming the latter hypothesis we compute ballistic orbits for test particles simultaneously ejected out of the galactic plane. The results are compared with H I-observations for $|b| \geq 10°$ (e.g., Heiles & Habing 1974; Colomb et al. 1980). Our conclusion is that the observations could support the hypothesis of an explosive event. However, a detailed model must take into account both the inhomogeneities present in the initial gas distribution, and the effects of the disturbances of the gas produced by the evolution of the OB associations formed all along the process.

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THE GALACTIC SPIRAL STRUCTURE

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We investigate stable orbits of stars in the Galactic potential and we test the stability of 2 and 4 spiral arms solutions. A more detailed description of the mass distribution model was presented by Amaral (1995). This model consists in the superposition of three different components: a spheroid including the bulge and the halo; a disk represented by two exponential density laws and a third component representing the interstellar gas. In addition, such a model predicts a rotation speed in agreement with observations of OH/IR stars, carbon-rich AGB stars and planetary nebulae (Amaral et al. 1996).

We consider for the spiral structure of the Galaxy the sum of 2 and 4 spiral components. It is able to fit the observed tangential directions to arms with a pitch angle of $14°$. According to studies of spatial distribution of open clusters we adopt the angular velocity of the spiral pattern as 20 km s^{-1} kpc^{-1}. This set of parameters are in agreement with observations, and provide self-consistency, which means that stable stellar orbits at the imposed spiral potential (Contopoulos & Grosbol 1986, 1988) produce density fluctuations and perturbations in the potential similar to the imposed potential.

We find that a superposition of 2 and 4 arms components presents many of the observed characteristics of the spiral structure, being able to fit the tangential directions, to explain the existence of the local spur and to explain properties which seem to have been incorrectly interpreted as being due to the existence of a bar.

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