Molecular Gas, Dust, and Star Formation in Galaxies
Proceedings IAU Symposium No. 292, 2012
T. Wong & J. Ott, eds.

doi:10.1017/S1743921313000665

The spiral structure of our Milky Way

L. G. Hou and J. L. Han

National Astronomical Observatories, Chinese Academy of Sciences, China
email: lghou@nao.cas.cn

Abstract. The spiral structure of our Milky Way has not yet been well outlined. HII regions, giant molecular clouds (GMCs) and 6.7-GHz methanol masers are primary tracers for spiral arms. We collect and update the database of these tracers which has been used in Hou *et al.* (2009) for the spiral arms.

The new database consists of ∼ 2000 HII regions, ∼ 1300 GMCs and ∼ 800 methanol masers (6.7 GHz). If the photometric or trigonometric distance for any tracer is available from the literature, we will adopt it. Otherwise, we have to use the kinematic distance. We modify the V_{LSR} according to the newly determined solar motions (U_0 = 10.27 km s^{-1}, V_0 = 15.32 km s^{-1} and W_0 = 7.74 km s^{-1}, Schönrich *et al.* 2010), then calculate the kinematic distances with a flat rotation curve (R_0 = 8.3 kpc, θ_0 = 239 km s^{-1}, Brunthaler *et al.* 2011). Very important step is that we weight tracers according to the excitation parameters of HII regions or the masses of GMCs, and a constant weight for masers. All three kinds of tracers are used together to outline the spiral structure (Fig. 1). A contour and gray map is constructed after we made a Gaussian extension for the tracers with the amplitude of weighting parameter.

Keywords. Galaxy: structure — HII regions — ISM: clouds

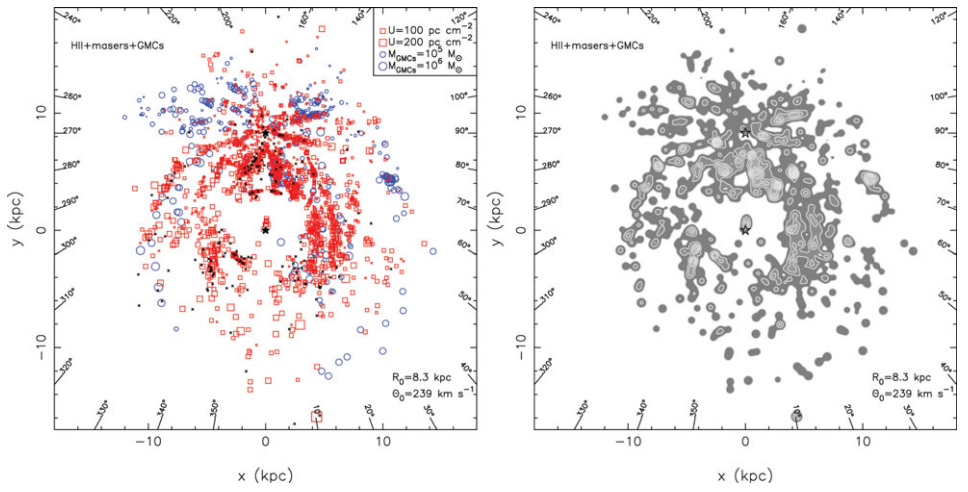

Figure 1. Left: the distribution of HII regions (red squares), GMCs (blue circles) and 6.7-GHz methanol masers (black dots). Right: the contour and gray map after Gaussian extension with the amplitude of weighting parameter.

References

Brunthaler, A., Reid, M. J., Menten, K. M., *et al.* 2011, *Astronomische Nachrichten*, 332, 461
Hou, L. G., Han, J. L., & Shi, W. B. 2009, *A&A*, 499, 473
Schönrich, R., Binney, J., & Dehnen, W. 2010, *MNRAS*, 403, 1829