

Molecular clouds definition in the galactic scale simulations

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We present the self-consistent 3D chemo-dynamical model of the formation and evolution of giant molecular clouds (GMCs) in spiral galaxies. Our model includes nonequilibrium H₂ and CO chemical kinetics, star formation and feedback processes. In our simulations the spiral structure is driven by the large scale gravitational instability. We investigate the properties of giant molecular clouds at different evolution phases. This talk is focused on time-dependent and spatial variations of the parameter $R = \text{Sigma}(\text{H}_2)/\text{Sigma}(\text{HI})$ and H₂ to CO conversion factor for interstellar clouds. We discuss how various methods of a cloud definition (different density thresholds, abundances of H₂, CO etc) affect on the qualitative properties of both individual GMCs and samples of clouds.