

Z104a Molecular gas and Star Formation Properties in Early Stage Mergers: SMA CO(2–1) Observations of the LIRGs NGC 3110 and NGC 232

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Mergers of galaxies are an important mode for galaxy evolution because they serve as an efficient trigger of powerful starbursts. However, observational studies of the molecular gas properties during their early stages are scarce. We present CO(2–1) maps of two luminous infrared galaxies (LIRGs), NGC 3110 and NGC 232, obtained with the Submillimeter Array (SMA) with ~ 1 kpc resolution. While NGC 3110 is a spiral galaxy interacting with a minor (14:1 stellar mass) companion, NGC 232 is interacting with a similarly sized object. We find that such interactions have likely induced in these galaxies enhancements in the molecular gas content and central concentrations, partly at the expense of atomic gas. The obtained molecular gas surface densities in their circumnuclear regions are $\Sigma_{\text{mol}} \gtrsim 10^{2.5} M_{\odot} \text{pc}^{-2}$, higher than in non-interacting objects by an order of magnitude. Gas depletion times of 0.5–1 Gyr are found for the different regions, lying in between non-interacting disk galaxies and the starburst sequence. It is remarkable that such a minor interaction on NGC 3110 has triggered the formation of a large number (>350) of super star clusters (SSCs).