

It is still poorly constrained how the densest phase of the interstellar medium varies across galactic environment. This is partly due to the fact that probing high (critical) density molecular tracers within extragalactic sources at high spatial resolution, and covering a wide range in scales is challenging due to the large observing time required to achieve significant detections. I present new IRAM NOthern Extended Millimeter Array (NOEMA) observations of a range of dense molecular gas tracers (HCN, HNC, HCO⁺) and CO isotopologues (¹³CO, C¹⁸O) towards the nearby (11.3 Mpc), strongly barred galaxy NGC 3627. These observations of dense gas tracers represent the currently highest resolution (1.85 arcsec; 100 pc) observations across a nearby spiral galaxy. We find that the HCN/CO integrated intensity ratio, at face value tracing the dense gas fraction, does not correlate with the amount of recent star formation, yet it depends on the galactic environment. In addition, stars appear to be forming less efficiently in the inner 600 pc of the galaxy than in the bar, despite the latter containing a higher fraction of denser molecular gas. In assessing the dynamics of the dense gas towards the bar ends, we find multiple velocity components in both the HCN(1-0) and HCO⁺(1-0) line profiles, which can be associated with previously identified features in CO(2-1), and are co-spatial with peaks of H α emission, highlighting that the complex dynamics of this bar end region could be linked to the local enhancements in star formation. Our work demonstrates the importance of pushing such “mm-spectroscopy” towards high angular resolution and sensitivity to resolve and detect dense gas tracers on the scales of individual GMCs.