

NAOJ ALMA Scientific Research Grant 2020

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■ Title

Properties of molecular clouds identified by a physically-motivated method and their connection to galaxy-wide-scale environments

■ Summary

Recent ALMA observations find that physical and chemical properties of clouds (<100 pc) can depend on galaxy-wide-scale ($>kpc$) structures within a galaxy. Why do clouds care where they live within a galaxy? How do clouds adjust their physical and chemical properties depending on galaxy-wide-scale structures? To address these questions, we will investigate the molecular cloud structure of nearby galaxies with a physically- and chemically-motivated method we proposed, by exploiting rich multi-line ALMA data. Based on this analysis, we will examine the environmental dependence of molecular clouds in galaxies and explore their origins.