

Molecular Gas and Star Formation in Nearby Galaxies

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Much attention is being focused on the improvements ALMA will make in our knowledge of high-redshift galaxies. So far, detections of molecular gas at high redshift support the view that metallicity enhancements can occur quickly with the onset of the first starburst events (see review by Combes, Maoli, & Omont 1999). Thus a more complete understanding of star formation activity in the local universe, which can be pursued with high spatial resolution over a range of environments and metallicities, is valuable in studies of galaxies at all redshifts.

In this talk, I will briefly review work on molecular gas in nearby galaxies that has been pursued at existing mm-wave interferometers (BIMA, OVRO, NMA, IRAM), and discuss prospects for new science which can be achieved with ALMA. For instance, ALMA will be able to resolve giant molecular clouds in galaxies outside the Local Group, making it possible to conduct studies of extragalactic star formation on scales more compatible with those of Galactic studies of gas and stars. Furthermore, it will be possible to refine star formation prescriptions which have been developed over more global scales (e.g., Kennicutt 1989). This discussion will show the important contribution ALMA will make to understanding the ISM in nearby galaxies.

Combes, F., Maoli, R., & Omont, A. 1999 *A&A*, 345, 369

Kennicutt, R.C. Jr., 1989, *ApJ*, 344, 685

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