Title: Galactic Plane Surveys of Molecular Gas at FCRAO
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High spatial dynamic range imaging of molecular line emission along the galactic plane provides critical input to studies of the physical processes which regulate the evolution of star forming regions. High resolution is required to detect the discrete features within a highly textured medium while large area coverage allows one to place an emission component within an environmental context. With its ability to construct high spatial dynamic range images of the molecular interstellar medium, FCRAO has played an important role in defining the distribution and properties of giant molecular clouds in the Milky Way. I will review recently completed and ongoing surveys of CO emission with the FCRAO 14m telescope. These programs are made possible by the development of focal plane arrays at mm wavelengths and the implementation of On-the-Fly Mapping.

The FCRAO CO Survey of the outer Galaxy covers 330 deg^2 at $50''$ sampling (1.7×10^6 pixels) and remains the highest spatial dynamic range image of the molecular ISM to date. The Survey reveals the complex distribution of molecular gas generated by gravity, turbulence, UV radiation, and expanding motions driven by HII regions, stellar winds, and supernova. It provides important complementary information to the DRAO HI Galactic Plane Survey. I will highlight some of the most important results derived from the data.

Most of the molecular gas in the Milky Way resides within a ring located between 3.6 and 6 kpc. Describing the interstellar processes in this feature is essential to understanding star formation and the evolution of the Galaxy. The Boston University-FCRAO Molecular Ring Survey is a significant improvement over all previous surveys of the inner Galaxy as it measures the more optically thin tracer ^{13}CO J=1-0 emission, sampled at the Nyquist rate ($22''$) with high spectral resolution. These parameters enable one to gauge the structure *within* GMCs and to more readily associate molecular line emission with star forming regions identified by mid and far infrared photometry to derive distances and protostellar luminosities. Near-far side distance ambiguities are resolved by the presence or absence of HI self absorption at the velocity of the molecular feature allowing one to reliably derive masses and far infrared luminosities of associated protostars and clusters. Initial results from this ongoing survey are presented.