

## "Studying Star Formation and ISM Physics in Nearby Galaxies"

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By combining optical IFU data-cubes with CO+21cm datasets of nearby star forming disk galaxies we will study the role that local parameters like the metallicity, the dust-to-gas ratio, the intensity and hardness of the radiation field, the local gravitational potential, the turbulent Mach number, and the presence of local dynamical disturbances, have on setting the star formation efficiency (SFE). The local conditions across the different environments present in the ISM of galaxies affect the collapse of cold gas structures, the formation and dissociation of molecular hydrogen, and can in principle control the internal physical properties of GMCs and their ability to form stars. Expanding currently available datasets at  $300 \text{ pc}^{-1} \text{ kpc}$  ( $5'' - 15''$ ) resolution (e.g. VENGA, VLA-THINGS, CARMA-STINGS, IRAM-HERACLES) with new  $1''$  resolution IFU and sub-mm observations resolving  $\sim 50 \text{ pc}$  scales (from ALMA and MUSE programs) will allow us to bridge the gap between galaxy-scale and GMC-scale phenomena and provide a link to studies of star formation in the Milky Way.