Cross-calibrating CO- and dust-based gas masses and assessing the dynamical mass budget in Stripe82

The lives of galaxies are shaped by their in situ conditions and the environment in which they are embedded. Gas forms the key ingredient that acts as the bridge between these two regimes: in its atomic phase being directly connected to external feeding, and once converted into the molecular phase providing the immediate fuel for star formation. I will present results from an extensive IRAM 30m survey probing CO(1-0) and CO(2-1) emission of star-forming galaxies in Stripe82, for which matching dust continuum SEDs from WISE and Herschel are available. I will discuss new insights into the cross-calibration of CO- and dust-based methods to weigh the cold gas reservoirs. Then I will proceed to demonstrate how the dynamical mass budget can be assessed on the basis of CO spectral line profile fitting.