Mapping molecular gas in Super Spiral Galaxies

Investigating star formation in unquenched massive galaxies

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Abstract :
The population of galaxies in the high-mass range (M>10^11 Msun) is almost entirely represented by quenched early-type galaxies. Except for 6 % of the most luminous galaxies observed by Ogle et al. (2016, 2019) at redshift z<0.3, that are indeed massive super spiral galaxies (SSG). These objets are of great interest because they question our knowledge on galaxy evolution and challenge mass-quenching scenarios. They have preserved their rotation-supported disc shape as well as a standard to high star formation rate (SFR) throughout their growth process, although we know growth can severely affect both these aspects ; either by disrupting the gas and stellar dynamics (mergers, collisions) or by depriving the galaxy of its gas content (RAM pressure stripping, tidal effects, AGN feedback). As such, SSGs constitute a relevant population to study failed quenching in galaxies. Learning more about their star forming gas content is necessary to better understand star formation in such objects. In this contribution, I will present preliminary results from molecular gas observations (NOEMA/IRAM) of a small sample of SSGs at redshift z ~ [0.01 ; 0.25], which allows us to map the distribution of their cold gas reservoir and for one of them, measure the resolved star formation efficiency.