

# The balance between gravity, turbulence and feedback processes : regulating star formation and galaxy growth in Milky Way-like spirals and their high-redshift progenitors

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I will present new theoretical results on the balance between self-gravity, interstellar medium turbulence, and stellar feedback processes, and how they help regulate (or sometimes trigger) star formation and galaxy growth in various environments and redshifts. These results are based on very high resolution (sub-parsec) simulations of various types of galaxies, finely resolving the turbulence cascade and using new refined models for stellar feedback. The low efficiency of star formation in the Schmidt-Kennicutt diagram for Milky Way-like galaxies will be explained, the variations in this diagram with galactic environment will be explored. The balance of gravity, turbulence and feedback will also be explored at high redshift, where the low efficiency of star formation and the high efficiency of galactic winds regulate galaxy growth itself.