

Gas dynamical processes: Star formation and AGN fueling and feedback

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I will review some recent results about the molecular content of galaxies and its dynamics. In particular the star formation is closely linked to the dense gas distribution, and this agrees with numerical simulations. The star formation efficiency increases with redshift, as shown by the Kennicutt-Schmidt law, and the derived depletion time. In massive galaxies, the gas fraction was higher in the past, and galaxy disks were more unstable and more turbulent.

The different processes to cause rapid gas inflow (or outflow) in galaxy centers will be reviewed, including galactic winds from starbursts, and AGN feedback. Non axisymmetries can be created or maintained by disk instabilities, or galaxy interactions. Various scenarios will be described, including gas accretion and secular evolution.