

Abstract

We are running Cosmological hydrodynamical Zoom-in Simulations specifically of Milky Way like galaxies.

A definite equilibrium between star formation and feedback is still not established especially for objects in this range of mass ($\sim 10^{12}$ Msun) and the Stellar to Halo Mass Ratio (SHMR) is still not fully under control. Indeed, comparing the SHMR, which is built from observations together with abundance matching techniques, with hydro simulations is not necessarily a clear task. Namely several workarounds and definitions of the stellar mass used in the comparison are used within the community. With regard to this issue, we compare the classical Kennicutt-Schmitt Star Formation scheme approach (Krumholz & Tan 2007) with the Multi-freefall Star Formation scheme (Kimm et al 2017), a scheme that aims to reproduce molecular cloud physical mechanisms of star formation, taking into account gas hydrodynamical features such as turbulence and sound speed (Federrath and Klessen 2012). We also test two SN feedback schemes (Teyssier et al. 2013, Kimm et al. 2015) and the resulting effects on the morphology of both the baryonic and dark matter components of the final galaxy at $z=0$.

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