

Title:

The gaseous Universe in calibrated hydrodynamical simulations

Abstract:

State-of-the-art cosmological hydrodynamical simulations now yield realistic galaxy populations. This success is primarily thanks to calibration of the ill-understood efficiencies of the feedback mechanisms that regulate and quench galaxy growth, to ensure reproduction of key present-day galaxy scaling relations. The main predictive power of the simulations therefore resides in the gaseous Universe and the high- z galaxy population, so confrontation of these elements with germane observations is particularly constraining. I will give a brief overview of the current cosmological simulations landscape, and discuss how future landmark facilities might help shape our understanding of how galaxies and their gaseous environments influence one another.