ABSTRACT ORAL CONTRIBUTION

THE INFLUENCE OF ENVIRONMENT ON THE HI MASS FUNCTIONS IN COSMOLOGICAL SIMULATIONS

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Neutral atomic Hydrogen (HI) in a galaxy is an important indicator of its star formation rate (SFR) With these HI measurements one can obtain the HI mass distribution among galaxies, known as HI mass function (HIMF), which is an important tool to analyse galaxy formation. Only until recently the size of the cosmological surveys allow observational studies of the local Universe HIMF. In this work we study the cosmological environmental dependence of HIMF on different dark matter simulations to complement HI observational studies on cosmological scales. We use diverse environment definitions to divide the galaxies/halos into groups and build HIMFs for different environments to analyse the variation on the Schechter fits parameters. We perform this analysis on both the Millennium Run and the Illustris Simulation. The main conclusions are that in the Millennium Run, the Schechter slope α as well as its 'knee' mass $\log(M^*/M_\odot)$ increase with the density of the environment. A similar trend can be found in the Illustris simulation as well, once we acccount for cosmic variance.

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