Invited talk

From Large Volume Simulations to Near Field Cosmology

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During the last decade we run a series of dark matter simulations with 3840^3 particles within volumes of $(2500/h\ \mathrm{Mpc})^3$, $(1000/h\ \mathrm{Mpc})^3$), $(400/h\ \mathrm{Mpc})^3$ and $(160/h\ \mathrm{Mpc})^3$. Galaxies have been derived applying the semianalytic models GALACTICUS, SAG, and SAGE to the Gigaparsec simulation. We have extendend this MultiDark project to an even larger volume ($4000/h\ \mathrm{Mpc})^3$) as well as to a smaller volume of $(64/h\ \mathrm{Mpc})^3$ for which we used constrained initial conditions from the CLUES project (https://www.clues-project.org). In the constrained simulations of CLUES numerical counterparts of the Virgo cluster and of the Local Group can be identified and allow to study Near Field Cosmology. I am going to review some results from these projects. I will also briefly introduce the CosmoSim database https://www.cosmosim.org/ from which access to the simulations is possible.