
The Importance of Small-Scale Structure in the CGM: Simulations of FIRE and FOGGIE

Cameron Hummels*¹

¹California Institute of Technology – United States

Abstract

Cosmological hydrodynamics simulations are increasingly able to reproduce galaxies like those we observe in nature. However, the detailed structure of the circumgalactic medium (CGM), the tenuous gas around galaxies, remains an unresolved challenge. As the interface between star formation, feedback, galactic gas accretion, and acting as a reservoir hosting half the baryons in a galaxy, the CGM is the key to understanding what drives galactic evolution. I will present research conducted with the high-resolution FIRE (particle-based) and FOGGIE (grid-based) simulations, revealing how small-scale structure present in the CGM plays a dominant role in defining the character of the CGM, both in metallicity distribution, outflow generation, and thermal characteristics. In the end, resolution matters in studies of the CGM.

*Speaker