

Title:

The Circumgalactic Medium: Observational Synergies and Leveraging Synthetic Data

Abstract:

The circumgalactic medium (CGM) is a dynamic, multiphase reservoir of gas regulating the flow of gas between galaxies and intergalactic medium. I will review the current observational landscape of the multiphase CGM, outlining the *Hubble*-driven successes at low-redshift and the *JWST*-driven future potential at high-redshift. I will also review the successes and failures of hydrodynamic simulations at reproducing these observations and giving insight to interpreting them. Finally, I will present new results from the FOGGIE (Figuring Out Gas & Galaxies In Enzo) simulation suite, wherein we achieve unprecedented circumgalactic resolution in a cosmological context. I will show that resolving the small-scale structure of the simulated CGM has important ramifications for interpreting and predicting both observable circumgalactic gas and the galaxies themselves.