

Comparing Simulations of Galaxy Formation With Observations Across Cosmic Time

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Abstract

I will present results from new cosmological hydrodynamic simulations of galaxy formation incorporating a sophisticated and broadly successful treatment of galactic outflows. Detailed galaxy properties seen in these models will be compared against surveys at various epochs using our new SED fitting tool called SPOC, which uses simulated star formation histories as a Bayesian prior in order to optimally determine the physical properties of broad-band selected objects. Particular areas of focus in this talk are the properties, evolution, and fate of reionization-epoch galaxies, the evolution of the mass-metallicity relation as a test of feedback, and merger rates (as traced by close pairs) across cosmic time. The theme of this talk is to describe the current state of galaxy formation simulations in the context of distant galaxy surveys: How they can help to interpret observations, how they can be optimally and robustly tested, and how current surveys highlight the successes and failures of such models.