

**The first billion years of galaxy formation in cold and warm dark matter cosmologies**

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**Abstract**

Over the past few years, instruments such as the Hubble Space Telescope have provided tantalising glimpses of a time when the earliest galaxies were just assembling in an infant Universe. In this talk, I will present a semi-analytic theoretical model that captures the key physics of supernova feedback in ejecting gas from low-mass halos, and tracks the resulting impact on the subsequent growth of more massive systems via halo mergers and gas re-accretion in early galaxies. In addition to successfully explaining a wide range of observed data sets, our model naturally predicts the evolution of the faint end slope of the luminosity function and yields a census of the cosmic stellar mass density at these early epochs. I will show how this framework will be a powerful testbed for WDM models accessible with the forthcoming James Webb Space Telescope. I will end by showing the implications of early galaxy formation for reionization in both cold and warm Dark Matter cosmologies.