

Daniel Weisz – Astronomy Seminar 9/26/2018

Title: The Lowest-Mass Galaxies In the Early Universe: Insights from the Local Group

Abstract: The Local Group is home to ~100 galaxies less massive than the Small Magellanic Cloud ($10^8 M_{\text{sun}}$). Such low-mass galaxies have become increasingly relevant to a broad range of astrophysics from cosmic reionization to deciphering the nature of dark matter. Yet, they are simply too faint to be directly detected at any appreciable redshift, compromising our ability to place them into a cosmological context. In this talk, I will describe how observations of resolved stellar populations in Local Group galaxies enable the measurement of detailed star formation histories, which provide the only avenue for tracing the evolution of low-mass galaxies across cosmic time. I will review our current knowledge of low-mass galaxy evolution over 6 decades in stellar mass, with a particular emphasis on the very early Universe. I will illustrate how local and high-redshift galaxy observations can be used in tandem to improve our understanding of cosmic reionization, and will conclude by discussing prospects for increased synergy between near-field and far-field galaxy studies in the JWST era.