

# Previewing Roman's Survey of Stellar Halos Using the FOGGIE Simulations

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**Abstract:** Over the next decade, the astronomical community will be deploying a number of instruments that will revolutionize our understanding of the low surface brightness universe. The Nancy Grace Roman Space Telescope, in particular, will combine extreme sensitivity with a wide field-of-view to become a powerful tool for studying the faint halos of stars that have been found to extend to the virial radii of many galaxies in our cosmic neighborhood. In this presentation, I will show new results from the FOGGIE (Figuring Out Gas & Galaxies In Enzo) cosmological simulations aimed at making predictions for Roman's survey of the stellar halos of nearby galaxies. The FOGGIE suite consists of zoom-in simulations of six Milky Way analogs in which resolution has been enhanced in the gas surrounding the central halo (the circumgalactic medium) and in the old stellar populations that typically make up stellar halos. This enables the simulations to better capture the quenching of dwarf galaxies as they are accreted, as well as the stellar substructure that their tidal destruction produces. I use the high-resolution FOGGIE simulations to "observe" the stellar halos of Milky Way-like galaxies at the same sensitivity and resolution as Roman will. I will discuss the origins of these stellar halos and make predictions regarding Roman's prospects for disentangling the properties of the individual dwarf galaxies that created them.