Star Clusters and Galaxies within EDGE

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Abstract

As new surveys push to lower surface brightness, we are uncovering new populations of both dwarf galaxies and star clusters that blur the boundaries between the two. In my PhD project, I use the state-of-the art EDGE simulations (mass resolution ~1e2 Msun; spatial resolution ~3pc; LCDM cosmology) to study the formation of the very smallest stellar systems – both dwarf galaxies and star clusters – over cosmic time. I will introduce EDGE and present some of the results we have had so far before focusing on how we can observationally separate star clusters that do not form within their own dark matter halos from dwarf galaxies that do. This will shed new light on which of the new low stellar mass objects found around the Milky Way and other nearby galaxies are dwarf galaxies, and which are star clusters. I discuss the implications of my findings for testing galaxy formation models, and for probing the nature of dark matter.

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