

Triumphs and tribulations of near-field cosmology with wide-field surveys: a biased perspective

Over the last decade, wide-field surveys have revolutionized our view of the Milky Way's stellar halo and dwarf galaxy population. Much of this observational progress has been motivated by a series of apparent "crises" for our cosmological model: the missing satellites problem, too big to fail, and the planar distribution of dwarf galaxies. These challenges have effectively functioned as flashlights pointing us to interesting galaxy formation physics. I will highlight related observational progress in our understanding of galaxy formation using near-field observations. I will then focus on the limiting impacts of observational bias, ways that imminent and future surveys will be used to tackle these biases, and ongoing studies of extant survey data that will inform this future work. In particular, I will present new predictions for the number of Milky Way dwarf galaxies expected to be discovered in DES and LSST, the use of RR Lyrae stars to discover dwarf galaxies close to the plane and at exceptionally low surface brightness, and the use of M giant stars to map the Milky Way's halo beyond its virial radius.