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Testing the LCDM Cosmology with Observations of the Local Group MICHAEL BOYLAN-KOLCHIN, The University of Texas at Austin

The local Universe provides a unique and powerful way to explore galaxy formation and cosmological physics. Through measurements of the abundances, kinematics, and chemical composition of nearby systems that can be studied in exquisite detail, we can learn about the initial spectrum of cosmological density fluctuations, galaxy formation, dark matter physics, and processes at cosmic dawn that might otherwise remain unobservable. I will summarize some of the new and surprising results in this rapidly-changing subject of "near-field cosmology" and discuss how these results are driving advances in both astronomy and particle physics.