

Abstract Submitted  
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**Probing Growth of Cosmic Structure Using Galaxy Dynamics: A Converging Picture of Velocity Bias** HAO-YI WU, DRAGAN HUTETER, AUGUST EVRARD, University of Michigan — The dynamics of galaxies observed by redshift surveys reflects the gravitation potential of collapsed structure in the Universe, thus providing a sensitive probe of growth of structure and dark energy. To interpret the survey results, numerical simulations are commonly employed; however, these simulations do not always provide realistic galaxy properties due to our limited understanding of baryon physics. In this talk, I will first discuss the impact of uncertainties in simulations on the cosmological results and show that the velocity bias – the fact that galaxies could have different velocities from dark matter – can be a dominating source of systematic error. I will then present a study of the velocity bias of cluster galaxies using both N-body and hydrodynamical simulations. I will demonstrate how different physical processes can result in different dynamic properties of galaxy tracers, and how a consistent picture emerges using state-of-the-art methods for tracking galaxy dynamics.

Hao-Yi Wu  
University of Michigan

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