

The Large-Scale Structure of the Universe

Thursday, 1 June 2023 14:30 (30 minutes)

It is expected that measurements of the large-scale structure of the Universe will soon become our leading sources of fundamental cosmological information. In this talk, I will review some of the major progress, both theoretical and data-oriented, that has been made in understanding the physics of galaxy clustering, as well as what we might hope to learn about new physics from these measurements. As a main example, I will discuss our recent analysis of the BOSS galaxy-clustering power spectrum and bispectrum data using the one-loop predictions from the Effective Field Theory of Large-Scale Structure (EFTofLSS), where we find impressive constraints on cosmological parameters. Overall, we find that including higher-order predictions, which allows us to analyze the data to smaller length scales and access more physical modes, significantly reduces the error bars of cosmological parameters. Even with this existing BOSS data, some of our results are competitive with CMB constraints. This points to exciting, even stronger constraints from future surveys such as DESI, Euclid, and MegaMapper, and opens the door to exploring exciting new physics with precision large-scale structure measurements.

Would you be interested in presenting a poster? (this will not impact the decision on your talk)

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Session Classification: Late Universe