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Abstract for an Invited Paper
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Understanding the Large-Angle CMB and Blinding DES Combined-Probe Analyses: Towards Precision Cosmology on the Largest Observable Scales

JESSICA MUIR, Stanford University

With the advent of increasingly large cosmological datasets (and correspondingly small statistical uncertainties), our ability to extract information about fundamental physics from observations will be limited by our ability to understand and account for systematic errors. The three projects which comprised my dissertation research are united by the goal of characterizing and mitigating potential sources of bias in cosmological analyses. The first two projects focus on features of the large-angle Cosmic Microwave Background (CMB) which have been identified as statistically unlikely in our standard cosmological model, and which could provide clues about the physics of inflation. I will describe how galaxy survey systematics limit our ability to separate primordial and late-time contributions to those large-angle features, and will characterize the extent to which several commonly studied anomalous large-angle features are (or are not) actually independent of one another. In the final part of my talk I will introduce a new and robust method for blinding the analysis of multiple cosmological probes, and will describe how it is being used to protect the results of the ongoing Dark Energy Survey Year 3 combined weak lensing and galaxy clustering analysis from experimenter bias.