



Simulating optical systematics in next-generation CMB experiments

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Next-generation experiments studying the cosmic microwave background (CMB) are planning to deploy tens of thousands of detector elements. This effort should dramatically improve map sensitivities and therefore advance our understanding of numerous astrophysical observables accessible at millimetre wavelengths. With increasing sensitivities, however, our effort to map the polarization of the CMB is at risk of being curtailed by subtle instrument effects that are not properly modeled — systematics. A predominant group of potential systematic effects are related to the optical systems. In this talk, I will introduce some basic concepts in CMB polarimetry, present key upcoming CMB experiments of the next decade, discuss various optical modeling techniques that inform the design of these experiments, and show how the various modeling techniques currently at our disposal can influence future data analysis efforts.

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