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Controlling Beam Systematics in Next Generation CMB Experiments

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Future CMB experiments will require an unprecedented control of systematics in order to constrain the B-mode polarisation power spectrum. There are a plethora of different systematics which effect the measurements of the CMB, but in this talk we shall concentrate on the effects of beam systematics resulting from optical imperfections that can lead to contamination of the observed signals. One particular concern of these types of systematics is that they can result in mixing of signals of different "spin", causing leakage from the much larger spin-0 intensity signal to the spin-2 polarisation signal – in order to reach their desired sensitivity next generation experiments will need to understand and control this type of contamination. We will present a general overview of the effects of beam systematics, along with some of the ways they may be combatted both in the analysis pipeline and through instrument design and scan strategy.

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