Contribution ID: **30** Type: **not specified**

Effect of Half-Wave Plate systematics on the estimate of r

Tuesday, 1 December 2020 19:45 (25 minutes)

A rotating Half-Wave Plate (HWP) is included in the design of future CMB experiments, such as LiteBIRD. A realistic HWP is characterised by frequency-dependent non-idealities (i.e. efficiency, non-ideal phase shift, cross-polarization) that are measured within a certain error. We simulate how uncertainties in the determination of the aforementioned non-idealities affect estimates of the tensor-to-scalar ratio r in a LiteBIRD-like experiment. By assuming a threshold on the acceptable level of bias Δr, we set requirements on the sensitivity that should be achieved with measurements of each non-ideal parameter.

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Session Classification: 6. methods: instrumentation 2