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Impact of instrumental systematic effects on component separation and large scale B-modes measurements

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The next generation of CMB polarisation experiments needs to have sufficient sensitivity and frequency coverage to detect and characterise the primordial B-modes signal, and to distinguish it from foregrounds contamination. This requires the deployment of detectors arrays of many thousands of multichroic detectors, along with new technologies for polarisation modulation, antennas, readout, etc. This increased complexity will introduce new instrumental systematic effects, which need to be accounted for in instrument modelling and data analysis, in particular during the component separation step.

In this talk, I present a novel map-based framework for parametric component separation that allows to take into account a wide range of instrumental systematic effects, and forecast their impact on cosmological parameters estimation, in particular the tensor-to-scalar ratio r. I will detail the key steps of the framework, and introduce methods to model selected systematic effects in this context, such as frequency dependent polarisation angle, readout crosstalk and interplay of these effects with bandpasses. I will present early results that demonstrate the capabilities of the framework, and discuss prospects for future applications.

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