

# Foreground separation study for PICO

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# Objectives

- Demonstrate the PICO capability to separate CMB from foregrounds
  - At the map level: get maps and **characterize uncertainties**
  - At the Power Spectrum level, (T)EB: get spectra and characterize uncertainties
  - Constraints on  $r$
- Investigate the impact of design changes on the results above
  - eliminating frequency bands at low frequencies, high frequencies, both
  - reducing / improving the sensitivity by some factor ?
  - reducing / improving the angular resolution by some factor ?

# Method

- Simulated observation maps for sky models of varying complexity
  - Simple: perfect linear mixing, no pixel variation
  - Moderate: simple parametric model with varying emission law parameters
  - Complex: TBD
- Analysis
  - Simple: we know everything about foregrounds and forecast the noise increase
  - Moderate: we know the model and estimate its parameters
  - Hard: we don't know the model a priori and it is not "simple parametric"