Contribution ID: **262** Type: **Poster**

Systematic effects and foreground cleaning for LiteBIRD satellite

The detection of primordial B-mode signal in CMB polarization could provide precious information about the early stages of the Universe evolution, especially by discriminating between several inflationary scenarios. *LiteBIRD*, a space-borne experiment selected by the Japanese Aerospace Exploration Agency (*JAXA*) and gathering a world-wide collaboration (US/Europe), will target the CMB B-modes to estimate the tensor-to-scalar ratio parameter r with a total uncertainty of $\sigma_r \leq 10^{-3}$. The r parameter is associated to the amplitude of primordial gravitational waves generated during inflation, an hypothetical phase of exponential expansion of the Universe which occurred right after the Big Bang. The small amplitude of B-mode signal requires an exquisite calibration accuracy and control of any sources of uncertainty that could bias measurements of primordial B-mode. The two major impediments for a CMB B-mode measurement are : (i) the systematic effects arising from an imperfect characterization and calibration of the instrument. (ii) the contamination by the emissions from our own Galaxy, dominating the CMB B-mode signal at large angular scales. This analysis consists in understanding the impact of a relative polarization gain mis-calibration on the tensor-to-scalar ratio assessment for LiteBIRD satellite. Specifically, we aim at seeing to what extent the choice of a specific component separation method affects the estimation of the tensor-to-scalar ratio in presence of gain calibration errors.

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