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Study of beam side-lobes systematics and calibration for the LiteBIRD mission

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LiteBIRD is a full sky space mission, expected to be launched in the late 2020s, whose goal is to constrain primordial physics via a high precision measurement of CMB polarization. It is a strategic Large-class mission of JAXA and is strongly supported in Europe, in particular by CNES which is in charge of the Medium and High Frequency Telescopes. LiteBIRD's main scientific objective is to find strong evidence of the cosmic inflation era through a measurement of the tensor-to-scalar ratio r from a high precision observation of CMB B-modes.

This can only be done with an extreme control of systematic effects. Among the expected sources of systematic errors, those sourced by beam far side-lobes are believed to be the most important for LiteBIRD. Indeed, they induce foreground contamination from the galactic plane to cleaner regions at high galactic latitude that are not entirely cleaned by component separation and can have a strong impact given LiteBIRD's high sensitivity. In this talk, I will present a study of this systematic effect, and the conclusions on the calibration requirements and design of the instruments.

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