

10.2.21 WP 9-6X3: LiteBIRD Fase A – Foregrounds

PROJECT: Studi di Cosmologia		WP REF.: 9-6X3
WP TITLE: LiteBIRD Fase A - Foregrounds SUB-CONTRACTOR: SISSA START EVENT: KO+18 END EVENT: RA4 WP MANAGER: Carlo Baccigalupi		Sheet: 1 of 1 Issue Ref: 1 Issue Date: 30/03/2018

OBJECTIVES

Within the activities towards the selection for Phase B of LiteBIRD, foreseen in about one year from now and involving the Italian community with leading roles, this Work Package deals with the effects of foregrounds on the following main aspects:

- support to the definition of system requirements produced within the CDF study,
- integration of foreground simulation and cleaning apparatus into the LiteBIRD simulation infrastructure including the scanning strategy and main systematics, with particular focus on the impact of the High Frequency Telescope (HFT) designs, strategy for Calibration and Testing (CT),
- assessment of the overall foreground cleaning capabilities of focal plane design, robustness against most important systematics.

INPUTS

Necessary inputs are:

- documents describing the LiteBIRD mission, specifying in particular
 - Mission Main Targets (MMT, e.g. minimum detectable cosmological B-mode signal, capabilities of spectrum reconstruction)
- definition of requirements and systematics considered for the CDF and Phase A studies, including in particular:
 - Detector bandpasses estimates for the HFT and LFT,
 - CT strategy and optical design and properties,
- simulation pipeline definition,
- set of simulated sky with relevant systematics effects included.

TASKS

- Task 1 (T1): LiteBIRD cleaning simulation assessment for the baseline focal plane configuration,
- T2: investigation of foreground effects from realistic scan strategy (particularly with RM2, UniFE),
- T3: characterization of foreground pickup from far sidelobes (particularly with BO, MI),
- T4: effects from foreground leakage from detector bandpasses (particularly with PI, RM1),
- T5: iteration and optimization (with all nodes).

OUTPUTS

- Output 1 (O1): baselining foreground cleaning capabilities,
- O2: foreground induced MMT degradation from scan strategy effects,
- O3: biases on MMT due to far sidelobes foreground pickup,
- O4: characterization and quantification of foreground leak into detector bandpasses,
- O5: optimized HFT and LFT designs,
- O6: selection of optimal CT strategy.

SCHEDULE

T1: T0+1M, delivery in O1 (internally produced and distributed across all nodes),

T2: T0+12M, delivery in O2 (shared with RM2, UniFE), O5, O6, with all nodes,

T3: T0+12M (T0+1M for specific support to CDF study), delivery in O3 (shared with BO, MI), O5, O6 with all nodes,

T4: T3-12M, delivery in O4 (shared with PI, RM1), O5, O6 with all nodes.

T5: T0+12M, delivery in O5, O6 with all nodes.

Activity completed at RA3

