

PROJECT: Studi di Cosmologia		WP REF.: 5-6X1
WP TITLE: RF testing for future CMB experiments SUB-CONTRACTOR: Dip. Fisica / Università di Milano Bicocca START EVENT: KO END EVENT: RF WP MANAGER: Mario Zannoni		Sheet: 1 of 1 Issue Ref: 1 Issue Date: 01/09/2016

1. OBJECTIVES

- A detailed survey of testing capabilities (cryogenics and RF) within the Italian CMB in the light of the requirements of the current and future CMB experiments, and eventual recommendations for possible upgrades to cope with the high level of accuracy requested.
- A parametric study of the key components of the optical chain of a typical CMB mission (Telescope, HWP, Filters, Detectors, Feed-Horns, OMT, LNAs) aimed at translating scientific requirements on astrophysical/cosmological quantities into technological/instrumental specifications.

2. INPUTS

- Contract and Technical Annex
- Work plan & Schedule
- Instrumental responses of the relevant instruments
- Specification of noise level for the relevant instruments

3. TASKS

Main collaborations: all nodes

- Identification of procedures and instrumentations (test facilities within the Italian community) to perform system and sub-system level tests and characterizations at room and cryogenic temperature
- Study of the instrumental systematic effects of current and future architectures of CMB polarization experiments
- Translation of scientists' specifications for future experiments/missions into technologists' specifications
- Support to LSPE/STRIP data analysis (systematics analysis)

4. OUTPUTS

Deliverables

- A detailed map of the Italian facilities fit for a deep characterization of RF components with the attainable accuracy
- A parametric study of the systematic effects induced by the components of a typical optical chain for CMB polarization expressed in technologist units.



5. SCHEDULE

First Year, t0+6months

- Identification of the facilities within the Italian Community

First Year t0+12months

- Final Map of the existing test facilities for what, where, when to do and with what accuracy.

Second year, t0+18months

- A draft of the parametric study

Second year, t0+24months:

- A preliminary version of the parametric study

Third year, t0+30months:

- A revision of the Map of the existing test facilities

Third year 2st Semester:

- Final version of the parametric study

