

<b>PROJECT: Studi di Cosmologia</b>	<b>WP REF.: 3-6X2</b>
<b>WP TITLE: Support to data analysis for LSPE/SWIPE</b> <b>SUB-CONTRACTOR: Dip. Fisica / Università La Sapienza</b> <b>START EVENT: KO</b> <b>END EVENT: RF</b> <b>WP MANAGER: Francesco Piacentini</b>	<b>Sheet: 1 of 1</b> <b>Issue Ref: 1</b> <b>Issue Date:01/09/2016</b>

## 1. OBJECTIVES

- Prepare quantitative simulations of SWPE datasets including optimized scan strategy and known systematic effects
- Coordinate and contribute to the development of the analysis pipeline
- Test the performance of the pipeline by means of simulated datasets and devise strategies to mitigate systematics.
- Perform the data analysis

## 2. INPUTS

- Contract and Technical Annex
- Work plan & Schedule
- LSPE/SWIPE documentation

## 3. TASKS

*Main collaborations: all nodes included in the LSPE collaboration*

- Develop a detailed instrument model and simulator
- Mission Planning
- Simulate and optimize attitude and pointing
- Simulate and optimize instrument calibrations
  - o Beam
  - o Responsivity
  - o polarimetric efficiency
  - o cross-polarization
  - o time response
  - o noise
- Analyze instrument calibration data
- Customize efficient data cleaning algorithms
- Customize efficient noise estimation algorithms
- Customize efficient monte-carlo techniques for error assessment



- Customize component separation codes
- Study ancillary datasets to be used for component separation
- Customize Angular power spectra estimators
- Customize likelihood estimators
- Define and develop null-tests for LSPE data
- Customize cosmological parameters estimates
- Optimize secondary science outputs

#### 4. OUTPUTS

- Simulation pipeline
- Simulations database
- Calibration database
- Analysis pipeline
- Analysis results

#### 5. SCHEDULE

First Year, t0+6 months

- Instrument model development
- Simulations development

First Year, t0+12 months

- Definition of calibration procedures

Second year, t0+18 months

- Analysis of calibration data
- Simulations database
- Pipeline implementation

Second year, t0+24 months:

- Analysis of simulated dataset and optimization of analysis pipeline

Third year, t0+30months:

- Preliminary data analysis

Third year, t0+36months:

- Data analysis

