COSMOS WP9-6X2

Weak Lensing Characterization and De-Lensing
WP leader: Carlo Baccigalupi

Task 9-6X2.1: Support to Experimental Design

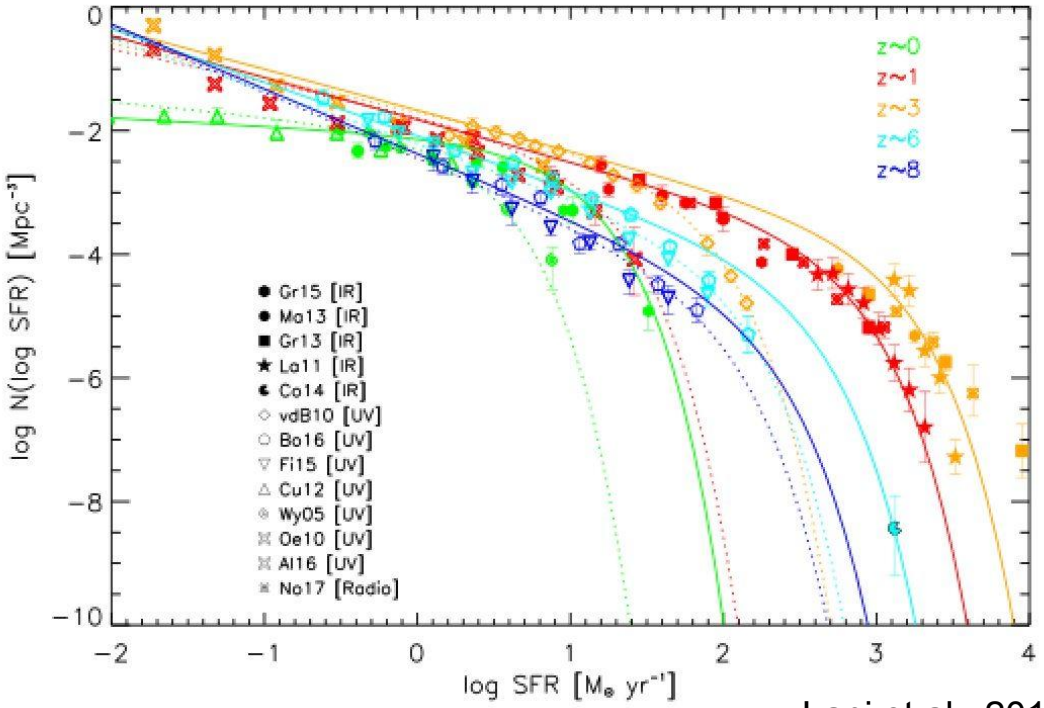
- Support for forecasting de-lensing for feasibility studies using semi-analytic techniques:
  - Forecasting de-lensing capabilities for probe configurations reaching the arcminute angular scale
  - Using integrated foreground cleaning and de-lensing FIsherization
  - Deliverable for RA1: software ready, case study ongoing
- Schedule: T+0M - T+6M
- Task leaders: Davide Poletti, Carlo Baccigalupi
- Support (preliminary!):
  - Davide Poletti, RadioForeground Post-Doc till Fall, 2018
  - Vladimir Lukovic (Post-Doc, ToV)
  - PhD students
- Links to other WPs: all

Task 9-6X2.2: Galaxy Populations and LSS Tracers

- Characterization of LSS tracers through population of Galaxies:
  - Study of Galaxy populations
  - Cross-Correlation with CMB
  - Methods of Data Analysis
- T+0M - T+24M
- Task responsible: Andrea Lapi
- Support (Preliminary!):
  - Luigi Danese
  - RTDA
  - Domenico Marinucci, Pasquale Mazzotta
  - PhD students (Anirban Roy (SISSA), ...)
- Links to other WPs: WP1-6X1,2,WP9-6X1

Task 9-6X2.2: Galaxy Populations and LSS Tracers

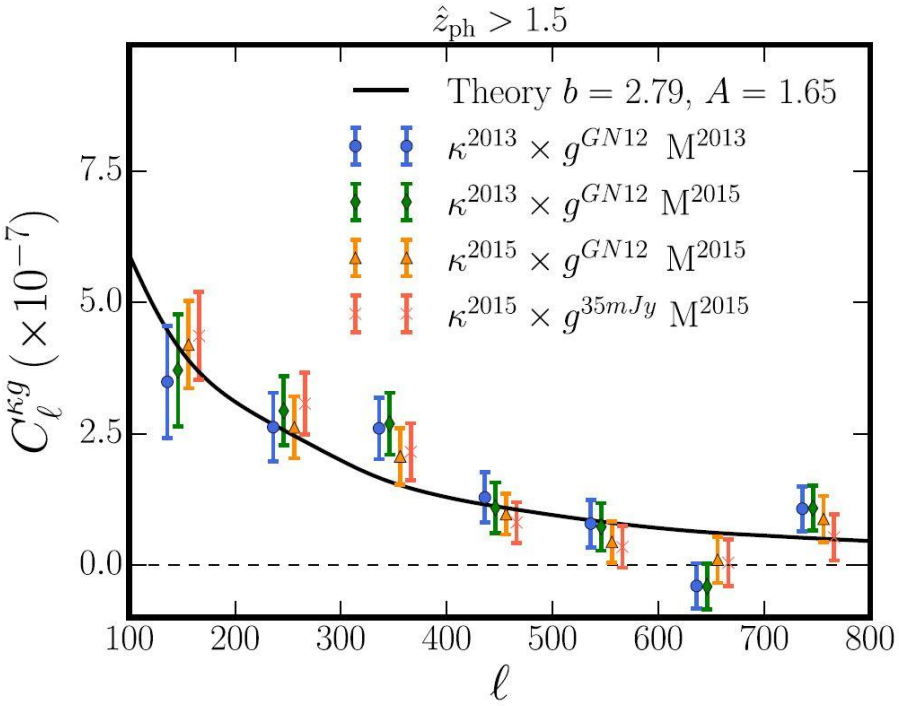
The SFR distribution of galaxies at different redshifts, reconstructed from UV, far-IR and radio data. The high SFR-end is populated by dusty, highly clustered, and violently star-forming galaxies, that constitute signposts of non-linear dark matter structures.



Lapi et al., 2017

Task 9-6X2.2: Galaxy Populations and LSS Tracers

We robustly detect (>25 sigmas) the cross-correlation between the number density maps of such high z>1.5 dusty star-forming galaxies from *Herschel* with the CMB lensing maps from *Planck*, that instead trace quasi-linear perturbations of the matter density field.



Bianchini et al., 2014, 2015

Task 9-6X2.3: Production of Algorithms for De-Lensing

- Production and Testing of De-Lensing Algorithms
  - Internal de-lensing
  - De-lensing using external tracers
  - Under development in collaboration with APC, Imperial College, Sussex, Prototype codes within 2017, development and applications in 2018, 2019
- T+12M - T+24M
- Task responsible: Carlo Baccigalupi
- Support (Preliminary!):
  - RTDA
  - Vladimir Lukovic (Post-Doc, ToV)
  - PhD students
- Links to other WPs: WP1-6X1,2, WP4-6X1, WP7-6X1, WP8-6X1,2, WP9-6X1

Task 9-6X2.4: Data Analysis & Simulations

- Application of de-Lensing to simulations and data
  - PolarBear2/Simons Array, 2017, 2018, 2019
  - LSPE, 2019, depending on scan strategy overlap with arcminute scale observations
  - QUBIC, 2019, internal de-lensing or using external tracers
  - Preparation for COSMOS Future Probes/Simons Observatory/Satellite
- T+0M - T+36M
- Task responsible: Carlo Baccigalupi
- Support (Preliminary!):
  - Instrumental teams
  - Davide Poletti, RadioForegrounds Post-Doc till Fall 2017
  - RDTA
  - Vladimir Lukovic (PostDoc (ToV), ...)
  - Paolo Natoli
  - PhD students
- Links to other WPs: all