

Mapping Distant Universe with Lyman Break Galaxies

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Future Spectroscopic surveys will be designed to probe a large volume of the Universe with a galaxy density sufficient to measure the extremely-large-scale density fluctuations required to explore primordial non-Gaussianity and therefore inflation. In addition, combining the spectroscopic surveys with the next generation CMB-S4 experiment can provide the first 5σ confirmation of the neutrino mass hierarchy from astronomical observations. Finally, these high-redshift measurements will probe a Dark Matter dominated era and test exotic models where Early Dark Energy properties vary at high redshift.

We propose to use Lyman Break Galaxies (LBGs) in the $2.0 < z < 4.5$ redshift range as tracers of the matter. These galaxies are selected by using a u/g-dropout approach based on a very deep u/g-bands that can be provided by imaging surveys such as LSST. We will present the results of pilot surveys observed in COSMOS and XMM fields by DESI from 2021 to 2024. We will show that we can achieve both the LBG densities and the redshift accuracy required for these future spectroscopic surveys.

Primary author: Dr YECHE, Christophe (CEA-Saclay, Irfu)

Co-author: Dr RUHLMANN-KLEIDER, Vanina (CEA-Saclay, Irfu)

Presenter: Dr YECHE, Christophe (CEA-Saclay, Irfu)

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