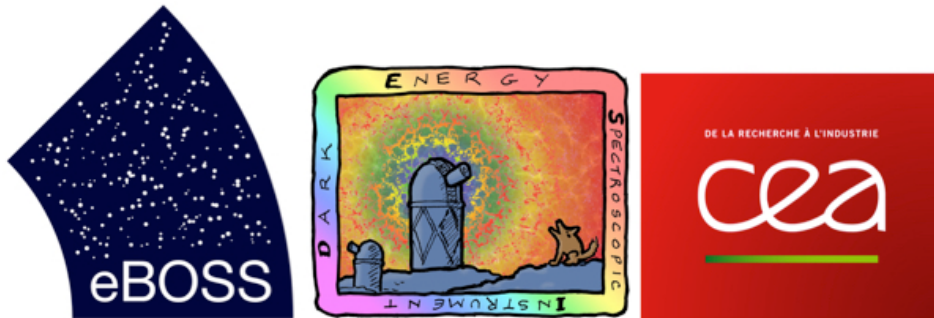# The 5th joint meeting eBOSS DESI France

mardi 7 mai 2019 - mardi 7 mai 2019

Astrophysics Departement-CEA Saclay

Recueil des résumés

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Cosmological Constraints from Cosmic Homogeneity

Auteur: Pierros Ntelis[1]

[1] *Centre of Particle Physics Marseille*

Auteur correspondant pntelis@cppm.in2p3.fr

In the era of upcoming large scale structure surveys the sky will be more revealing than ever. A summary of the latest results of measuring cosmic homogeneity using SDSS data and its cosmological impact will be given. Furthermore, a discussion on ongoing work on along the lines of alternative tests of cosmic homogeneity will be presented.

2

Anisotropic clustering analysis of the eBOSS DR16 LRG in Fourier Space

Auteur: Hecrtor Gil-Marin[1]

[1] *ICC*

We explore the cosmological implications of anisotropic clustering measurements of the LRG sample from Data Release 116 (DR16) of the Sloan Digital Sky Survey IV extended Baryon Oscillation Spectroscopic Survey (eBOSS) in Fourier Space. The LRG sample observed by eBOSS offers a direct tracer of the density field between redshift $0.6 < z < 1$. By analysing the power spectrum and bispectrum we perform constrains on the the angular diameter distance, Hubble parameter, and cosmic structure growth rate. We preform a measurement of Omega matter independent from CMB observations and a test of GR by comparing the growth of structure with the expansion history rate.

3

Blinding Techniques for spectroscopic LSS Surveys

Auteur: Samuel Brieden[1]

Co-auteurs: Hector Gil Marin [2]; Jose Luis Bernal Mera [1]; Licia Verde [1]

[1] *ICC, University of Barcelona*

[2] *LPNHE*

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Next generation galaxy surveys such as DESI are able to measure the cosmological parameters with the highest precision ever achieved by LSS observations. The major challenge for DESI relies in the correct identification and modelling of systematics. One source of systematic uncertainty is human confirmation bias: in technically difficult experiments as DESI, where different working groups are involved and a lot of effects need to be tested, it is not obvious when the analysis is completed and shall be stopped. Hence, the final result might be biased towards the expectation of the experimenters. Since this bias is of psychological origin, its impact is very hard or rather impossible to estimate.

The only way to remove confirmation bias consists in Blinding: the analysis is carried out on changed (blinded) data and the original data are not revealed (unblinded) until the analysis pipeline is frozen.

In this talk I introduce a method to blind LSS survey data at the galaxy catalog level in a controlled way. It consists of changing catalog redshifts in two steps: First, we apply an Alcock-Paszynski shift obtained from converting redshifts to distances using cosmological parameters that deviates from the fiducial model. Then, we employ a density dependent shift reminiscent to redshift space distortions. We test different configurations of our blinding scheme on 2048 mock realizations of the LOWZ and CMASS Sample, and validate that the measured shift in cosmological parameters induced by blinding matches our expectation.

4

Weak Lensing with Lyman-alpha forest surveys

Auteur: Sam Youles[1]

[1] *University of Portsmouth*

Auteur correspondant samantha.youles@port.ac.uk

Weak gravitational lensing causes small displacements in the apparent angular position of quasars, and of the Lyman-alpha forests in their spectra. By measuring local distortions from the Lyman-alpha auto and quasar cross correlation functions, we propose to reconstruct the lensing mass distribution. With tests on eBOSS and DESI mocks, we expect to make S/N forecasts for these and future surveys.

5

Clustering-redshift of DESI ELG targets using cross-correlation with eBOSS tracers

Auteur: Pauline Zarrouk[1]

[1] *ICC Durham University*

Auteur correspondant pauline.s.zarrouk@durham.ac.uk

Emission Line Galaxies (ELG) represent the largest sample of objects DESI will observe in the redshift range 0.6 < z < 1.6. All DESI ELG targets will come from the Legacy Surveys (DECaLS, MzLS, BASS) images collected in the grz system. At this stage, the collaboration is still testing the target selection algorithms to ensure that the official baseline for ELG meets the requirements, in particular in terms of the expected redshift distribution.
I have started a project whose aim is to apply the clustering-redshift technique to infer the redshift distribution of the DESI ELG photometric sample using cross-correlations with eBOSS LRG and quasars. In this talk, I will present an update of this project.

6

Results from Lya 3d correlation functions using DR14 results

Auteur: Victoria de Sainte Agathe[1]

[1] *LPNHE*

Auteur correspondant victoria.de.sainte.agathe@lpnhe.in2p3.fr

I will present the DR14 results on LyaxLya and LyaxQSO correlation functions which have recently been submitted (de Sainte Agathe et al. (2019), Blomqvist et al. (2019)).

7

Studying Lyman-alpha forest absorber properties through stacking

Auteur: Matthew Pieri[1]

[1] *Laboratoire d'Astrophysique de Marseille*

Auteur correspondant matthew.pieri@lam.fr

I will present the latest results from the stacking of Lyman alpha forest absorbers including the properties of strong-blended absorbers, which are a proxy for galaxies.

8

Measuring Large-Scale Inhomogeneities of Metals

Auteur: Sean Morrison[1]

Co-auteurs: Matthew Pieri [2]; David Syphers ; Tae-Sun Kim

[1] *LAM*
[2] *Laboratoire d'Astrophysique de Marseille*

Auteurs correspondants: matthew.pieri@lam.fr, sean.morrison@lam.fr

We are measuring the large scale of inhomogeneity of metals, which are expected to be associated with large scale proximity to quasars. These inhomogeneities are currently traced by combining oxygen, helium and hydrogen absorption, which exhibit variations on scales of ~10 cMpc and scales >200 cMpc. We are now exploring the association with directly observed quasar positions.

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DESI status

Auteur: Nathalie Palanque-Delabrouille[1]

[1] *CEA-Saclay*

Auteur correspondant nathalie.palanque-delabrouille@cea.fr

I'll present the status of the DESI project: the goals, the status of the installation of the instrument, and the near-term milestones both for the project and for the science.

Lunch / 10

Measuring BAO with DLAs and SBLAs

Auteur: Ignasi Pérez-Ràfols[1]

[1] *ICCUB - University of Barcelona*

Auteur correspondant iprafols@icc.ub.edu

I will present an update on the measurement of BAO using DLAs and SBLAs, i.e.,galaxies in absorption, by cross-correlating them with the Lyman alpha forest.

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eBOSS Quasar Mock Challenge

Auteur: Alex Smith[1]

[1] *IRFU, CEA Saclay*

Auteur correspondant alexander.smith@cea.fr

The eBOSS quasar sample provides a measurement of the growth of structure in the redshift range 0.8<z<2.2, bridging the gap between previous measurements. The aim of the quasar mock challenge is to validate the RSD models that will be used in the quasar clustering analysis. In this talk, I will give an overview of the HOD mocks that have been created using the OuterRim simulation, and show initial results from performing the RSD analysis on these mocks. I will also give an outline of the method which we aim to use to adjust the cosmology of the simulation, to create a series of blinded mocks.

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Target Selection in DESI and Preparation of Survey Validation

Auteur: Christophe Yeche[1]

[1] *CEA Irfu/SPP*

Auteur correspondant christophe.yeche@cea.fr

Target selection in DESI and preparation of Survey Validation

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Prospects of eBOSS/DES combination

Auteur: Eric Jullo[1]

[1] *LAM*

Auteur correspondant eric.jullo@lam.fr

In this talk, I will present the status of the project 0530, entitled "Probing gravity with combination of RSD and galaxy-galaxy lensing of ELG, LRG and DES weak-lensing". Mostly, I will present analytical forecasts.

14

Saclay Mocks

Auteur: Thomas Etourneau[1]

[1] *CEA Saclay*

Auteur correspondant thomas.etourneau@cea.fr

I'll present the very recent results of the Saclay Mocks.
Theses mocks have now the right b(z), beta(z), P1D(z). They also include DLA, with the proper N_HI and z distribution.
I'll also present the 10 realisations we just released.

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Impact of feedback on the 1D Lya power spectrum

Auteur: Solène Chabanier[None]

Using runs of the HorizonAGN simulations I'll present the effects of AGN and SN feedbacks on the 1D lyman alpha power spectrum

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Clustering analysis of the eBOSS quasar sample in Fourier space

Auteur: Richard Neveux[1]

[1] *CEA Saclay*

Auteur correspondant richard.neveux@cea.fr

Clustering analysis of the eBOSS quasar sample in Fourier space.

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Effect of galaxy reconstruction on voids

Auteur: Marie Aubert[1]

[1] *CPPM*

Auteur correspondant maubert@cppm.in2p3.fr

Galaxy reconstruction has proven to be a very effective method in order to improve the statistical significance of the BAO measurement and subsequent cosmological extraction.
The goal of the talk is to present an on-going work which aims to investigate the impact of such reconstruction on voids

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Measuring BAO with DLAs and SBLAs

Auteur correspondant iprafols@icc.ub.edu

I will present an update on the measurement of BAO using DLAs and SBLAs, i.e.,galaxies in absorption, by cross-correlating them with the Lyman alpha forest.