



Contribution ID: 86

Type: **not specified**

## The Homogeneity Scale of the Universe

*Wednesday, 26 April 2017 18:00 (15 minutes)*

The Cosmological Principle is one of the main pillars of the Friedman-Lemaître-Robertson-Walker models that constitute the theoretical basis of  $\Lambda$ CDM concordance model. The Cosmological Principle states that the universe becomes homogeneous and isotropic at very large scale. While the isotropy of our universe is tested from several different probes and surveys, with the most well known, the Cosmic Microwave Background Radiation (CMB), the property of homogeneity is more complicated to establish observationally with comparable accuracy and is usually implied through the Copernican Principle.

In this talk, I will present a study of the transition to homogeneity with the latest SDSS3-BOSS galaxy sample spanning a redshift range  $[0.43, 0.7]$  using a technique based on the evolution of the fractal dimension as a function of scale. I will show that besides finding the expected transition to homogeneity, the scale at which occurs is in excellent agreement with the expectations from  $\Lambda$ CDM. Furthermore, the transition to homogeneity can also be seen as a new standard scale in Cosmology and therefore be used to constrain further the  $\Lambda$ CDM model. I will present forecasts of the constraints that can be obtained with this new probe with the data from incoming large scale structure surveys.

**Primary author:** Mr DELIS, Pierros

**Presenter:** Mr DELIS, Pierros

**Session Classification:** Afternoon session