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High redshift BAO from BOSS to eBOSS

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The first detection of Baryon Acoustic Oscillations (BAO) in the correlation function of the galaxy density field by Eisenstein et al. (2005) and Cole et al. (2005) set a milestone in the era of precision cosmology, providing a new, independent method for the measurement of cosmological distances. The Baryon Oscillation Spectroscopic Survey (BOSS), one of the experiment of the third generation of the Sloan Digital Sky Survey (SDSS-III), produced the first high redshift ($z=2.34$) measurement of the BAO scale using the Lyman-alpha forest of quasars as a tracer of the underlying matter density field (Delubac et al. 2015). During this talk, I will review the analysis that led to this measurement as well as present new results using the final dataset of BOSS. I will present the cosmological implications of this measurement when combined with other results (Aubourg et al. 2015) including constraints on the Dark Energy. I will pursue by introducing the extended Baryon Oscillation Spectroscopic Survey (eBOSS) of the fourth generation of the SDSS (SDSS-IV) that uses the same facility as BOSS, and show how it will tighten the constraints on our cosmological model.

Collaboration

BOSS and eBOSS collaborations

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