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Cosmology with photometric quasars

Thursday 17 April 2014 17:30 (20 minutes)

Quasars are highly biased tracers of the large-scale structure and therefore powerful probes of the initial conditions and the evolution of the universe. However, current spectroscopic catalogues are too small for studying the clustering of quasars on large-scales and over extended redshift ranges. Hence one must resort to photometric catalogues, which include large numbers of quasars identified using imaging data but suffer from significant stellar contamination and systematic uncertainties. We will present a detailed analysis of the clustering of photometric quasars from the Sloan Digital Sky Survey, and demonstrate that the effects of observational systematics can be robustly eliminated with appropriate techniques. In particular, we will show how to mitigate the impact of spatially varying systematics, such as calibration and observing conditions, using an extended mode projection approach when correlating the quasar samples. We will finally present constraints on the quasar bias in the range $0.5 < z < 3.5$ derived using an optimal estimator that exploits both the clustering of the quasar samples and their cross-correlation with CMB lensing.

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