

Contribution ID: 276

Type: Contributed talk in mini symposium

## Is the large-scale structure traced by the BOSS LOWZ galaxies consistent with Planck?

Thursday, 14 December 2023 14:40 (10 minutes)

Recently, several studies reported a significant discrepancy between the clustering and lensing of the Baryon Oscillation Spectroscopic Survey (BOSS) galaxies in the Planck cosmology. We construct a simple yet powerful model based on the linear theory to assess whether this discrepancy points toward deviations from Planck. Focusing on scales  $10 < R < 30 h^{-1}$  Mpc, we model the amplitudes of clustering and lensing of BOSS LOWZ galaxies using three parameters: galaxy bias  $b_{g}$ , galaxy-matter cross-correlation coefficient  $r_{gm}$ , and A, defined as the ratio between the true and *Planck* values of  $\sigma_8$ . Using the cross-correlation matrix as a diagnostic, we detect systematic uncertainties that drive spurious correlations among the low-mass galaxies. After building a clean LOWZ sample with  $r_{\rm gm} \sim 1$ , we derive a joint constraint of  $b_{\rm g}$  and A from clustering+lensing, yielding  $b_g=2.47^{+0.36}_{-0.30}$  and  $A=0.81^{+0.10}_{-0.09}$ , i.e., a  $2\sigma$  tension with *Planck*. However, due to the strong degeneracy between  $b_{\rm g}$  and A, systematic uncertainties in  $b_{\rm g}$  could masquerade as a tension with A=1. To ascertain this possibility, we develop a new method to measure  $b_{\rm g}$  from the cluster-galaxy cross-correlation and cluster weak lensing using an overlapping cluster sample. By applying the independent bias measurement ( $b_g = 1.76 \pm 0.22$ ) as a prior, we successfully break the degeneracy and derive stringent constraints of  $b_{\rm g} = 2.02^{+0.16}_{-0.15}$  and  $A = 0.96 \pm 0.07$ . Therefore, our result suggests that the large-scale clustering and lensing of LOWZ galaxies are consistent with Planck, while the different bias estimates may be related to some observational systematics that needs to be mitigated in future surveys.

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Session Classification: Cosmology with large-scale structure