

Abstract Submitted
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Self-Calibration Techniques for 3-point Intrinsic Alignment Correlations in Weak Gravitational Lensing Surveys¹ MICHAEL TROXEL, MUSTAPHA ISHAK, Univ. of Texas at Dallas — The weak lensing signal (cosmic shear) has been shown to be contaminated by correlations between the intrinsic alignment (IA) of galaxies, which poses a barrier to precision weak lensing measurements in planned surveys. We review recent work to extend the self-calibration approach to the cosmic shear bispectrum. The self-calibration techniques use the redshift separation dependencies of the IA bispectra and the non-linear galaxy bias in order to isolate and remove the impact of the IA correlations on the cosmic shear signal. We outline the proposed self-calibration techniques for the 3-point cosmic shear auto- and cross-correlations and summarize their performance. Using conservative estimates of photo-z accuracy, we find that planned surveys will be able to measure the IA redshift separation dependence over ranges of $|\Delta z^P| \leq 0.2$ in the 3-point ellipticity auto-correlation. For the 3-point cross-correlations, we find that the self-calibration technique allows for reductions in the IA contamination by a factor of 10 or more over most scales and redshift bin choices and in all cases by a factor of 3-5 or more. The 3-point self-calibration techniques thus provide a means to greatly reduce the impact of IA on the cosmic shear signal.

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