Abstract Submitted
for the TSF17 Meeting of
The American Physical Society

Effects of Self-Calibration of Intrinsic Alignment on Cosmological Parameter Constraints from Future Cosmic Shear Surveys[1] JI YAO, MUSTAPHA ISHAK-BOUSHAKI, WEIKANG LIN, University of Texas at Dallas, MICHAEL TROXEL, Ohio State University — Intrinsic alignments (IA) of galaxies have been recognized as one of the most serious contaminants to weak lensing. The IA self-calibration (SC) method was shown in previous studies to be able to reduce the GI contamination by up to a factor of 10 for the 2-point and 3-point correlations. The SC method does not require the assumption of an IA model in its working and can extract the GI signal from the same photo-z survey offering the possibility to test and understand structure formation scenarios and their relationship to IA models. We study the effects of the IA SC mitigation method on the precision and accuracy of cosmological parameter constraints from future cosmic shear surveys LSST, WFIRST and Euclid. We perform analytical and numerical calculations to estimate the loss of precision and the residual bias in the best fit cosmological parameters We take into account uncertainties from photometric redshifts and the galaxy bias. We find that the confidence contours are slightly inflated from applying the SC method itself while a significant increase is due to the inclusion of the photo-z uncertainties. The bias of cosmological parameters is reduced from several-σ, when IA is not corrected for, to below 1-σ after SC is applied.

[1]NSF AST-1517768 and John Templeton Foundation

Ji Yao
University of Texas at Dallas

Date submitted: 15 Sep 2017 Electronic form version 1.4