

Abstract Submitted
for the APR15 Meeting of
The American Physical Society

Combining Galaxy-Galaxy Lensing and Galaxy Clustering: A Practical Approach YOUNGSOO PARK, KICP, University of Chicago, ELISABETH KRAUSE, KIPAC/SLAC, Stanford University, SCOTT DODELSON, Fermilab, University of Chicago, BHUVNESH JAIN, University of Pennsylvania, DARK ENERGY SURVEY COLLABORATION — Combining galaxy-galaxy lensing and galaxy clustering is a promising method for inferring the growth rate of large scale structure, a quantity that will shed light on the mechanism driving the acceleration of the Universe. The Dark Energy Survey (DES) is a prime candidate for such an analysis, with its measurements of both the distribution of galaxies on the sky and the tangential shears of background galaxies induced by these foreground lenses. By constructing an end-to-end analysis that combines large-scale galaxy clustering and small-scale galaxy-galaxy lensing, we forecast the potential of a combined probes analysis on DES datasets. In particular, we develop a practical approach to a DES combined probes analysis by jointly modeling the assumptions and systematics affecting the data vectors, employing a shared halo model, HOD parametrization, photometric redshift errors, and shear measurement errors. We also study the effect of external priors on different subsets of these parameters. We conclude that data from the first year of DES will provide powerful constraints on the evolution of structure growth in the universe, constraining the growth function to better than 5%.

Youngsoo Park
KICP, University of Chicago

Date submitted: 09 Jan 2015

Electronic form version 1.4