

Abstract Submitted
for the FWS16 Meeting of
The American Physical Society

CMB delensing for detecting primordial B-mode Signal ZHEN PAN, ETHAN ANDERES, LLOYD KNOX, Univ of California, Davis — One of the major targets for next-generation CMB experiments is the detection of the primordial B-mode signal. Planning is under way for Stage-IV experiments that are projected to have instrumental noise small enough to make lensing and foregrounds the dominant source of uncertainty for estimating the tensor-to-scalar ratio r from polarization maps. This makes delensing a crucial part of future CMB polarization science. In this paper we will present two likelihood methods for estimating the tensor-to-scalar ratio r from CMB polarization observations. These two methods combine the benefits of a full scale likelihood approach with the tractability of the quadratic delensing technique. The first method probes high frequency primordial B-mode fluctuations via a pixel space local likelihood approximation. The second method is a pixel space, all order likelihood analysis of the low frequency (high signal-to-noise) quadratic delensed B-modes. The tractability of both methods relies on a crucial factorization of the pixel space covariance matrix of the polarization observations which allows one to compute the full likelihood profile, as a function of r , at the same computational cost of a single likelihood evaluation.

Zhen Pan
Univ of California, Davis

Date submitted: 06 Oct 2016

Electronic form version 1.4