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**In Search of B-modes: Deconvolution Map-Making for CMB Polarization Observations** CHARMAINE ARMITAGE, BENJAMIN WANDELT, University of Illinois at Urbana-Champaign — The upcoming Planck satellite will provide new cosmological information contained in precision measurements of the polarization of the Cosmic Microwave Background (CMB) anisotropies. In particular, a measurement of the B-mode polarization would probe inflationary gravitational waves. Several challenges are faced in measuring this B-mode: the signal is tiny compared to the temperature anisotropies, and it is difficult to separate the E-mode from the B-mode. Thus, we expect that polarimetry experiments will be very sensitive to beam asymmetries and stray light. Deconvolution map-making (Armitage & Wandelt 2004) removes systematic effects due to beam asymmetries by solving the maximum-likelihood map-making problem for arbitrary beams. We compare results from our method with a standard map-making method and demonstrate that the true sky is recovered with high accuracy via the deconvolution method. We also consider foregrounds and show the effects of ignoring beam asymmetries on the reconstruction of point sources.

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