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**Combining Shear Statistics to Constrain Cosmological Parameters** SEDONA PRICE, California Institute of Technology, JASON RHODES, JOEL BERGE, Jet Propulsion Laboratory/California Institute of Technology, RICHARD ELLIS, California Institute of Technology — Weak gravitational lensing causes shear in the images of distant galaxies. Shear statistics can be measured from high-quality astronomical images and then fit to theoretical expectations. Thus constraints can be made on dark matter structures and on dark energy. Code to measure the two-point correlation function (2PCF) including tomography (redshift information) is modified and developed. Code to measure the signal-to-noise peak counts is adapted. The 2PCF and peak counts are measured on a shear catalog derived from the Hubble Space Telescope COSMOS survey. Constraints on cosmological parameters are then derived from the measured 2PCF and from the peak counts. These constraints are combined to break the degeneracy between the matter mass density ( $\Omega_m$ ) and the amplitude of density fluctuations ( $\sigma_8$ ), making the overall set of constraints tighter.

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