

Abstract Submitted  
for the DPP13 Meeting of  
The American Physical Society

**Direct extraction of coherent mode properties from imaging measurements in a linear plasma column**<sup>1</sup> ADAM LIGHT, University of Colorado Boulder, SAIKAT THAKUR, CHRISTIAN BRANDT, University of California, San Diego, YANCEY SECHREST, University of Colorado Boulder, GEORGE TYNAN, University of California, San Diego, TOBIN MUNSAT, University of Colorado Boulder — We present imaging measurements of coherent waves in the Controlled Shear Decorrelation Experiment (CSDX). CSDX is a well-characterized linear machine producing dense plasmas relevant to the tokamak edge ( $T_e \sim 3$  eV,  $n_e \sim 10^{13}/\text{cc}$ ). Visible light from ArII line emission is collected at high frame rates using an intensified digital camera. A cross-spectral phase technique allows direct visualization of dominant phase structures as a function of frequency, as well as identification of azimuthal asymmetries present in the system. Experimental dispersion estimates are constructed from imaging data alone. Drift-like waves are identified by comparison with theoretical dispersion curves, and a tentative match of a low-frequency spectral feature to Kelvin-Helmholtz-driven waves is presented. Imaging measurements are consistent with previous results, and provide non-invasive, single-shot measurements across the entire plasma cross-section. Relationships between imaging and electrostatic measurements are explored, including limitations of both techniques.

<sup>1</sup>The authors acknowledge support from the Center for Momentum Transport and Flow Organization, funded by the U.S. Department of Energy

Adam Light  
University of Colorado Boulder

Date submitted: 11 Jul 2013

Electronic form version 1.4