Abstract Submitted
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Imaging-based measurements of plasma turbulence in a linear device[1] A.D. LIGHT, University of Colorado Boulder, Center for Integrated Plasma Studies, S.C. THAKUR, University of California, San Diego, Center for Energy Research, Y. SECHREST, University of Colorado Boulder, Center for Integrated Plasma Studies, G.R. TYNAN, University of California, San Diego, Center for Energy Research, T. MUNSAT, University of Colorado Boulder, Center for Integrated Plasma Studies — We present the status of our ongoing study of imaging-based plasma turbulence measurements in the Controlled Shear Decorrelation Experiment (CSDX) at the University of California, San Diego. CSDX is a well-characterized linear machine producing dense plasmas relevant to the tokamak edge ($T_e \sim 3$ eV, $n_e \sim 10^{13}$/cc). Electrostatic fluctuations are measured with Langmuir probe arrays in concert with fast imaging over a range of plasma parameters. Drift-wave-like modes are observed with frequencies of $3-30$ kHz ($\omega L_n/c_s \sim 0.2-2$) and wavenumbers of $0.3-6$ cm^{-1} ($k\rho_s \sim 0.1-10$). Time-resolved velocity fields are obtained through pattern-matching velocimetry, allowing access to flow/turbulence interaction dynamics across the plasma radius. Current work includes measurements of mode structure, velocity profiles, Reynolds stress profiles, and ion-neutral coupling.

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