

Abstract Submitted
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Analysis of Flow Patterns in NSTX Edge Turbulence T. STOLTZFUS-DUECK, N. POMPHREY, J. KROMMES, S. ZWEBEN, PPPL, T. MUNSAT, University of Colorado, R. MAQUEDA, Nova Photonics — The dynamics of turbulent fluctuations near the edge of plasma confinement devices are thought to have a significant impact on plasma performance. The Gas Puff Imaging (GPI) diagnostic provides movies of density and temperature fluctuations in the tokamak edge region with high temporal (~ 4 microsecond) and spatial ($\sim 1-2$ cm) resolution. The Principal Component Analysis (PCA) method provides an optimized representation of each movie in terms of empirically derived spatial ‘eigenfunctions’ multiplied by time-dependent amplitudes. In this poster, new methods for the inference of a velocity field from the PCA representation of turbulent fluctuations, as well as implications related to the theory of edge turbulence, are discussed.

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