

Abstract Submitted
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Localized Measurement of Short Wavelength Plasma Fluctuations Using the DIII-D Phase Contrast Imaging Diagnostic¹ J.R. DORRIS, J.C. ROST, M. PORKOLAB, Massachusetts Institute of Technology, K.H. BURRELL, GA — The DIII-D Phase Contrast Imaging (PCI) turbulence diagnostic measures density fluctuations in two operational configurations: (1) line-integrated over the entire viewing chord or (2) using a rotating mask system that takes advantage of the vertical variation of radial magnetic field to make localized measurements along the PCI chord. The localized length of chord is inversely proportional to wavenumber, making this technique more favorable for short wavelength modes ($k > 8/\text{cm}$). Improvements in PCI S/N have allowed measurements to be obtained showing broadband turbulent fluctuations to 20/cm. Initial analysis of localized data during ECH heated L-mode discharges shows a change in turbulence propagation direction from ion to electron diamagnetic direction with increasing density. Gyrokinetic simulations using the GYRO code are being performed to investigate the mechanism for this propagation direction reversal. Further refinements of the localization analysis will allow a more robust quantitative comparison to simulation. Details of analysis enhancements and comparison to simulation will be presented.

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