

Abstract Submitted for the Forty-Seventh Annual
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Category Number and Subject: 562 (DIII-D Tokamak)

Theory Experiment

Comparison of DIII-D Phase Contrast Imaging Measurements in the Edge and Core Regions,* J.C. Rost, M. Porkolab, J.R. Dorris, *MIT*, K.H. Burrell, *GA* – During the last DIII-D run period, the phase contrast imaging (PCI) turbulence diagnostic acquired data in an upgraded configuration. The improvements include 10 MHz digitizers with a data record covering the entire discharge and a wavenumber range increased to 30 cm. The beam path was previously tangent to the LCFS but now passes through the LCFS and reaches $r/a=0.8$. The PCI was previously sensitive only to radial modes, but it is now sensitive to modes with finite poloidal wavenumber. Measurements of turbulence near the ITG range, particularly the $S(k,f)$ spectra, now show a Doppler shift that was never observed previously. Analysis of this new data includes the variation of the magnetic field along the beam path. Comparisons with previous PCI measurements in the old beam geometry give us a more complete picture of the edge turbulence. The increased wavenumber range also allows us to examine how experimental frequency spectra of plasma turbulence depend on the wavenumber range of the diagnostic.

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