Abstract Submitted
for the DPP11 Meeting of
The American Physical Society

Imaging and modeling DIII-D core turbulence by means of the Phase Contrast diagnostic[1] A. MARINONI, J.C. ROST, M. PORKOLAB, J.R. DORRIS, Plasma Science and Fusion Center, MIT, K.H. BURRELL, General Atomics — The Phase Contrast Imaging (PCI) diagnostic on the DIII-D tokamak has recently been modified to image density fluctuations near the plasma mid-radius. Although the PCI measures line integrals, an optical filter provides a certain degree of spatial localization thus restricting the measurements to the plasma core or edge. The DIII-D NBI system has also been recently upgraded by extending its vertical tilting, allowing new heating and rotating scenarios. The present work exploits these two upgrades and shows preliminary analysis of core-heated plasmas in various scenarios, evaluating the contributions to the signal from the core and the edge. Emphasis is placed on the analysis of transitions between different turbulent regimes, and how these compare to theoretical predictions. Time-space frequency spectra and correlation lengths are evaluated and compared to gyrokinetic modeling via a recently developed Synthetic Diagnostic tool that simulates micro-instabilities as seen by the PCI through line integrals.

[1]Work supported by US DOE under DE-FG02-94ER54235 and DE-FC02-04ER54698.

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Date submitted: 25 Jul 2011 Electronic form version 1.4