Abstract Submitted
for the DPP09 Meeting of
The American Physical Society

Full-Wave Codes Applied to Reflectometry Measurements of Core-Edge Turbulence in NSTX[1] S. KUBOTA, W.A. PEEBLES, N.A. CROCKER, UCLA, B.C. ROSE, Purdue U., S.J. ZWEBEN, T.S. HAHM, PPPL — The interpretation of turbulence properties from reflectometry measurements is often not straightforward and requires full-wave simulations using modeled turbulence and a detailed knowledge of the equilibrium profiles. On NSTX, the unique combination of reflectometry hardware (FM-CW, fixed- frequency, and correlation reflectometers) is well-suited to turbulence measurements in both core and edge plasmas. Here we report on the simulation work required to generate quantitative estimates of turbulence properties (such as turbulence levels, wavenumber spectra, decorrelation times, correlation lengths, flow velocities) from these measurements. We focus on the core-edge region near the L-H transition, where the evolution of the turbulence and density profile characteristics are related to the edge transport barrier formation. Simulations will use the UCLA 1-D and 2-D FDTD full-wave codes. Recently these codes were upgraded to utilize the parallel processing capabilities of the NVIDIA C870 GPU card.

[1]Supported by U.S. DoE Grant DE-FG03-99-ER54527 and the U.S. DoE National Undergraduate Fusion Fellowship.

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Date submitted: 17 Jul 2009 Electronic form version 1.4