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Study of High-k Turbulence with Microwave Scattering on NSTX Y. REN, S.M. KAYE, E. MAZZUCATO, W. GUTTENFELDER, W. WANG, PPPL, F. POLI, U. of Warwick, K.C. LEE, C.W. DOMIER, N. C. LUHMANN, JR., U. C. Davis — A comprehensive understanding of plasma turbulence and its relation to electron transport requires measurements of both large and small wavenumbers. Due to its low toroidal field and low aspect ratio, the National Spherical Torus eXperiment (NSTX) provides a unique laboratory to study the short- wavelength, electron-scale turbulence and its relation to electron transport. The electron-scale turbulence is studied on NSTX using a microwave scattering diagnostic capable of measuring the turbulence spectrum as a function of radial wavenumber with high spatial localization. Recent improvements in the scattering configuration and an upgraded microwave source allow the simultaneous measurement of more wavenumbers than were measured before, which makes more detailed comparisons with gyrokinetic simulations possible. We will discuss k spectra measured in both L and H-mode plasmas, as well as parametric dependence of high-k turbulence in H-mode plasmas. Comparison with non-linear gyro-kinetic simulations will be presented. Work supported by US DOE Contracts DE-AC02- 09CH11466 and DE-FG02-99ER54518.

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