Abstract Submitted
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Changes in edge turbulence characteristics across the L-H transition in NSTX[1] S. KUBOTA, W.A. PEEBLES, N.A. CROCKER, UCLA, R. MAINGI, C.E. BUSH, ORNL, R.J. MAQUEDA, Nova Photonics, S.J. ZWEBEN, R.E. BELL, B.P. LEBLANC, T.S. HAHM, G.J. KRAMER, PPPL — The fast evolution of turbulence and profiles are characterized across the L-H transition in NSTX. New millimeter-wave diagnostics are used to track the electron density profile and turbulence properties near the plasma edge. In NSTX, the rapid build-up of impurities in the edge following the L-H transition allows only a $\leq$10 ms window for reflectometry measurements across the transition barrier. The ultra-fast FMCW reflectometers (13-53 GHz) now have a $<$8.5 μs sweep capability, which allows the system to be swept across the entire outboard plasma, and therefore over the turbulence correlation length, faster than the turbulence decorrelation time. Substitution of the temporal correlation of the reflectometer signal for spatial correlation allows radial correlation length estimates in $<$0.5 ms. Fluctuation levels and mean/fluctuating flow velocities (zonal flows) are estimated with the poloidal correlation reflectometer. The connection between the local turbulence properties and the $E \times B$ shear will be discussed.

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