Abstract Submitted
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Turbulence suppression and poloidal flow dynamics at the L-H transition in NSTX[1] D.S. THOMPSON, R.J. FONCK, G.R. MCKEE, D.R. SMITH, I.U. UZUN-KAYMAK, University of Wisconsin-Madison — Long-wavelength density fluctuations are suppressed at the L-H transition in both the edge and core regions of National Spherical Torus Experiment (NSTX) plasmas. The magnitude of reduction varies among operational regimes. A beam emission spectroscopy (BES) system installed on NSTX measures these ion gyroscale fluctuations from r/a $\sim$ 0.1 to the scrape off layer. The system includes four poloidal arrays and high throughput optics aligned to the magnetic field pitch angle at the neutral beam. Radial and poloidal correlation lengths are measured near r/a $\sim$ 0.85 across the LH transition and typically decrease at the transition. These edge fluctuations have frequencies up to 100 kHz and radial and poloidal correlation lengths of approximately 10 cm. High frequency poloidal flow velocity fluctuations of the density turbulence are measured using the dynamic programming method of time delay estimation. These velocity fluctuations will be investigated for signatures of zonal flows or changes in the equilibrium velocity that may precede the transition.

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Derek Thompson
University of Wisconsin-Madison

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