

Abstract Submitted  
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**Edge Stability of Small-ELM Regimes in NSTX**<sup>1</sup> A. SONTAG, J. CANIK, R. MAINGI, ORNL, J. MANICKAM, R. BELL, S. GERHARDT, B. LEBLANC, PPPL, S. KUBOTA, UCLA, T. OSBORNE, P. SNYDER, GA, K. TRITZ, Johns Hopkins University — NSTX has observed low-frequency ( $f < 10$  kHz) unstable modes with characteristics similar to the edge harmonic oscillation (EHO) coincident with transition to a small-ELM regime where the ELMs reduce the plasma stored energy by less than 1%. Soft x-ray emission indicates that these modes are localized just inside the density pedestal. Microwave reflectometry shows density fluctuations in the pedestal at the mode frequency. Toroidal Mirnov analysis indicates  $n=1$  for the lowest order mode, which rotates at the plasma rotation frequency, with higher harmonics observed simultaneously in some cases. Stability analysis during the observed modes indicates instability to  $n=1-4$  with unstable mode eigenfunctions peaked near the plasma edge. Transition to this regime is associated with a downward biased plasma ( $\delta_r^{sep} < -5$  mm) and increased edge collisionality ( $\nu_{ped}^* > 1$ ). Increased pedestal pressure and bootstrap current are observed in the small-ELM regime, with the peak in the bootstrap current moved inward from  $\Psi_N = 0.96$  to 0.94.

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