

Abstract Submitted  
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**Particle-in-cell delta-f gyrokinetic simulations of the microtearing mode in NSTX** JUGAL CHOWDHURY, YANG CHEN, WEIGANG WAN, SCOTT E. PARKER, University of Colorado, Boulder, WALTER GUTTENFELDER, Princeton Plasma Physics Laboratory, JOHN CANIK, Oak Ridge National Laboratory — The properties of the microtearing mode for the National Spherical Torus Experiment edge and core parameters are studied using the particle-in-cell method based nonlinear, electromagnetic gyrokinetic code GEM. We investigate the dependence of the microtearing mode on various equilibrium quantities for the two cases. Although, the mode in both regimes depends on electron temperature gradient and beta in the same way, we observe different behavior with respect to the electron-ion collision. The role of electrostatic potential is non-negligible in each of the cases. It plays opposite role in the core and edge of the NSTX and leads to substantial stabilization or destabilization of the mode. These results will then be compared to the microtearing mode in a conventional tokamak.

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