

Abstract Submitted
for the DPP17 Meeting of
The American Physical Society

Investigating Trapped Particle Asymmetry Modes and Temperature Effects in the Lawrence Non-neutral Torus II¹ R. NIRWAN, P. SWANSON, M.R. STONEKING, Lawrence University, Appleton WI 54911 — Electron plasma is confined in the Lawrence Non-Neutral Torus II using a purely toroidal magnetic field ($R_0 = 18$ cm, $B < 1$ kG) for confinement times exceeding 1 second. The LNT II can be configured for fully toroidal traps or variable-length partial toroidal traps. The behavior of the plasma is observed by monitoring the image charge on isolated wall sectors. The plasma is excited by application of a sinusoidal tone burst to selected wall sectors. Phase-space separatrices are introduced by applying squeeze potentials to toroidally localized, but poloidally continuous sectors and the resulting interaction between trapped and passing particles populations results in asymmetry modes and transport. These experiments provide a comparison with similar experiments in cylindrical traps. We also report on the development of temperature measurement techniques and assess temperature affects on diocotron and asymmetry modes.

¹This work is supported by National Science Foundation Grant No. PHY-1202540.

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Date submitted: 14 Jul 2017

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