

Abstract Submitted
for the DPP08 Meeting of
The American Physical Society

Measurement of Interchange Structure Coupling through Excitation of Strong Nonaxisymmetric Flows¹ M.W. WORSTELL, B.A. GRIERSON, M.E. MAUEL, Columbia University — The high-field, mechanically-supported dipole in the Collisionless Terella Experiment (CTX) confines plasma that develops strong interchange mixing. When operated at lower densities, the plasma dynamics are dominated by the Hot Electron Interchange (HEI) mode. Following additional gas fueling, the increased plasma density stabilizes the HEI mode and the fluctuations become chaotic, exhibiting power-law frequency spectrum. We report the application of non-axisymmetric electrostatic biasing using a movable probe that modifies the measured fluctuations in both density regimes. Both positive and negative bias can be applied in order to investigate the effects of both static and dynamic excitations. The goal of our research is to measure the plasma response to potentials that resonantly and non-resonantly alter the structure of interchange mixing. We also report measurements from a newly-installed multi-point triple probe that record the radial variation of plasma parameters.

¹This work is supported by U.S. DOE Grant DE-FG02-00ER54585.

Matthew Worstell
Columbia University

Date submitted: 19 Jul 2008

Electronic form version 1.4