**Attracting Fixed Points for Radially Compressed Single-Component Plasmas**[1] J.R. DANIELSON, C.M. SURKO, M.W. ANDERSON, T.M. O'NEIL, University of California, San Diego — Rotating electric fields are used to compress electron plasmas confined in a Penning-Malmberg trap using the so-called rotating wall (RW) technique[2]. Over a broad range in RW frequency, plasmas can be compressed until the $E \times B$ rotation frequency, $\omega_E$ (with $\omega_E \propto n$, the plasma density), approaches the applied frequency, $\omega_{RW}$. Bifurcation and hysteresis are observed between low-density and high-density steady states as a function of the applied RW electric field amplitude and frequency. Here, models of the drive and drag torques are used to describe the stable, attracting fixed points of the system. Key ingredients are a drag torque due to a plasma-mode resonance, driven by static trap asymmetries, and a RW drive torque that passes rapidly through zero as $\omega_E$ approaches $\omega_{RW}$. A number of tests of the model are described, including perturbation experiments to confirm the nature of the RW torque and to measure its magnitude near the high-density fixed point. Open questions for future research, including a possible thermodynamic model to describe the plasma dynamics, are discussed.

[2]J. R. Danielson and C. M. Surko, Phys. Rev. Lett. **95**, 035001 (2005); and Phys. Plasmas **13**, 055706 (2006).

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Date submitted: 21 Jul 2007                    Electronic form version 1.4