Abstract Submitted
for the 4CF06 Meeting of
The American Physical Society

**Hollow Plasma Instability: Theory vs. Experiment**[1] MELISSA POWELL, GRANT MASON, ROSS SPENCER, Brigham Young University — A Malmberg-Penning trap is a cylindrical apparatus which confines non-neutral plasma (electrons only) with an axial magnetic field and negative electric potentials on both ends. It is a simple system for studying basic plasma behavior, so simple that theory and experiment ought to agree. Theory predicts that a hollow plasma density profile is unstable, and experiments agree. However, the experimental growth rate of the instability is much larger than the theoretical growth rate, by a factor of around 2-4. We are collaborating with Travis Mitchell's experimental research group at the University of Delaware to find the cause for this discrepancy by recreating their Malmberg-Penning trap in our computer simulation. The growth rates of our simulation test cases have remained roughly half that of Mitchell's experiments. We will report the results of investigating several possible causes for this discrepancy, including asymmetry, resistive connections to confining rings, a non-Maxwellian particle distribution function, the initial perturbation, and the polarization drift.

[1]National Science Foundation

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Date submitted: 11 Sep 2006 Electronic form version 1.4