Abstract Submitted
for the DPP08 Meeting of
The American Physical Society

Spinning a Hot, Unmagnetized Plasma C. COLLINS, C.B. FOREST, R. KENDRICK, J. JARA-ALMONTE, University of Wisconsin-Madison — A Plasma Couette Experiment is under construction to investigate a nearly unmagnetized, differentially rotating plasma. A host of astrophysically motivated processes can be studied, including the magnetorotational instability, a mechanism that may account for outward transport of angular momentum in accretion disks. The plasma is confined by a cylindrical, axisymmetric, highly localized ring cusp magnetic field at the boundary. Electrodes positioned between the magnet rings are biased with alternating polarity so that the resulting electric field induces ExB drift. This poster discusses the initial diagnostics for measuring plasma parameters, including rotation. Density and temperature profiles will be measured using a single tip Langmuir probe, and plasma potential will be determined using an emissive probe. As plasma begins to rotate, the plasma density and plasma potential are expected to hollow out, with the electron pressure gradient balancing the outward centrifugal force. Plasma flow will also be measured with a Mach probe. Evidence of rotation will be presented, and the efficiency of plasma spin-up through edge-applied ExB drift will be assessed.

Cami Collins
University of Wisconsin-Madison

Date submitted: 19 Jul 2008 Electronic form version 1.4