Abstract Submitted
for the DPP13 Meeting of
The American Physical Society

Evolution of Boundary Driven Velocity Fluctuations on the Princeton MRI Experiment[1] TOM ZICK, University of California San Diego, ETHAN SCHARTMAN, Nova Photonics, HANTAO JI, AUSTIN ROACH, Princeton Plasma Physics Laboratory, JEREMY GOODMAN, Princeton University, ERIC EDLUND, ERIK P. GILSON, PETER SLODOBA, Princeton Plasma Physics Laboratory — The Princeton MRI Experiment is a modified Taylor-Couette device consisting of two coaxial differentially rotating cylinders with split endcaps capable of producing quasi-Keplarian (qK) flows in a working fluid of GaInSn. The ultimate goal of this experiment is to excite and study the Magneto-Rotational Instability (MRI), thought to regulate the transport of angular momentum in accretion disks through the application of an axial magnetic field. As the MRI has been predicted to alter the flow velocity profile by only a few percent, it is imperative to fully characterize the magnetized boundary layers of the flow to allow unambiguous detection of the MRI. Spatial and temporal evolutions of the flow are observed with a set of Ultrasound Doppler Velocimetry diagnostics, optimized to measure both azimuthal and radial velocities. We report on experiments investigating the evolution of endcap driven fluctuations in qK flows under the effect of an applied axial magnetic field. The fluctuation spectra and radial profiles of velocity are presented with respect to the coupling of flow to the vertical boundaries.

[1]This work is partially funded by NUF, DOE, NSF, NASA,

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Date submitted: 12 Jul 2013 Electronic form version 1.4