Abstract Submitted
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The Maryland Centrifugal Experiment(MCX)[1] RICHARD ELLIS, S. CHOI, M.R. CLARY, R. ELTON, A.B. HASSAM, R. LUNSFORD, C. TEODORESCU, I. UZUN-KAYMAK, University of Maryland, A. CASE, S. MESSER, D. WITHERSPOON, HyperV Technologies — We report new results on MCX : a) measurements of ion rotational velocity profiles show parabolic radial profiles that demonstrate shear in the plasma rotation exceeds the critical value for shear stabilization; b) measurements of the velocity profile also show the plasma may not be undergoing isorotation , a departure from ideal MHD; c) a new insulator has eliminated the transition from high-rotation (HR) mode to low rotation(O) mode; d) the scaling of maximum rotational velocity with applied voltage and B shows that rotational velocity is clearly limited from above by the Alfven velocity but determining if the critical ionization phenomena is operable is not conclusive. We also report on: a) plans to launch a plasma jet from a newly constructed gun to impart momentum directly to MCX and b) magnetic probe measurements of fluctuations at a variety of azimuthal, radial, and axial locations to evaluate MHD stability and its relation to velocity profiles. Plans for higher voltages and higher B fields will be discussed.

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