

Abstract Submitted  
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**The Diamagnetism of Rotating Plasmas** WILLIAM YOUNG, S. CHOI, R. CLARY, R. ELLIS, A. HASSAM, C. TEODORESCU, I. UZUNKAYMAK, University of Maryland, MCX TEAM — Several magnetic pick up loops (diamagnetic loops) wound externally around the Maryland Centrifugal Experiment's (MCX) vacuum vessel measure changes in the axial plasma magnetic field averaged over the axial cross-section. These measurements provide symmetry and axial profile information of rotating plasma diamagnetism on a millisecond timescale (the L/R time of the vacuum vessel being less than a millisecond). The results are compared to an MHD equilibrium model by numerically solving for a perturbative solution to the Grad-Shafranov equation with supersonic rotation. Combined with an interferometer's density data, this model provides an estimate of the plasma temperature and tests for centrifugal confinement. Preliminary analysis shows reasonable agreement for the magnitudes and axial profiles of plasma diamagnetism across broad parameter variations.

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