

Abstract Submitted  
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**Viscous Coupling of Momentum from a Magnetized to an Unmagnetized Plasma**<sup>1</sup> NOAM KATZ, CAMI COLLINS, IVAN KHALZOV, BEN BROWN, CARY FOREST, University of Wisconsin, Madison — In order to drive rotation in the Plasma Couette Experiment (PCX), we must understand how momentum couples from the magnetized edge into the unmagnetized core. PCX uses rings of alternating-polarity permanent magnets to provide edge confinement, resulting in a well-contained, cylindrical and unmagnetized plasma. The rotation is driven at the edge with a  $\mathbf{J} \times \mathbf{B}$  torque, and viscous coupling is then required to achieve rotation in the bulk plasma. The plasma viscosity has not been well-measured in previous experiments, but PCX provides an excellent setup for its measurement. I will discuss progress towards explaining and optimizing the PCX velocity profile. This problem involves an anisotropic viscosity tensor, neutral drag, and strong gradients in the magnetic field.

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