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Internal velocity measurements in the Princeton MRI experiment
A.H. ROACH, M.D. NORNBERG, E.J. SPENCE, H. JI, Princeton Plasma Physics Laboratory, Center for Magnetic Self-Organization — The Princeton MRI experiment seeks to understand the effect of the magnetorotational instability on angular momentum transport in rotating MHD systems. Previous work has focused on observations of magnetic field fluctuations using external pickup coils. An effort is now underway to make local measurements inside the GaInSn working fluid. Ultrasound Doppler Velocimetry (UDV) will allow for the noninvasive measurement of single-component velocity profiles, and later the measurement of multi-component velocity fluctuations to yield the Reynolds stress. A single-component UDV system has been successfully tested with a stationary outer cylinder. The test showed the importance of the concentration of ultrasound-reflecting oxides in the fluid. Work is being done to give better control of the oxide concentration and to allow measurements to be made with a rotating outer cylinder. Preliminary results will be presented.

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