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Measuring the Magnetic Field of the Princeton Magnetorotational Instability Experiment J. WAKSMAN, H. JI, M. BURIN, E. SCHARTMAN, PPPL — The Princeton MRI experiment attempts to clearly demonstrate the Magnetorotational Instability in the lab for the first time. This instability has been theorized to be important in angular momentum transport in accretion discs. The research goal is to design and build an array of detectors in order to measure the external magnetic field of the MRI experiment. The amplitude and spatial distribution of magnetic perturbations are crucial for the identification of MRI and the study of its nonlinear saturation. The design includes two types of diagnostic devices. The first is a Hall Probe, designed to measure large, slowly-changing vertical fields imposed externally by coils surrounding the experiment. The second is a magnetic pickup coil, designed to measure small, but quickly-changing magnetic fields, containing information on the modal structure. The B- fields measured with these diagnostics help us to gain a greater understanding of both liquid metal and accretion disc flows. Detailed design and calibration will be reported. Research supported by the DOE (DE-AC02-76-CH03073) and the NUF Program in Plasma Physics and Fusion Energy Sciences.

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