

Abstract Submitted
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Using Pickup Coils to Detect Magnetorotational Instability in Liquid Gallium D. COSTER, M.D. NORBERG, E. SCHATMAN, H. JI, A. ROACH — The physics of accretion disks in space around bodies like black holes and forming stars is still not fully understood, particularly relating to the mechanisms of fast angular momentum transport. It has become widely accepted that the magnetorotational instability (MRI) is responsible for inciting the turbulent outward flux of angular momentum needed for fast accretion to occur. The goal of the MRI experiment is to provide a better understanding of these mechanisms by realizing MRI at a much smaller scale. It should be able to reproduce the MRI in the lab by passing a magnetic field through liquid gallium that is being quickly rotated and confined between two independently turning cylinders. Previously, non axisymmetric modes have been observed. In order to better resolve these modes, we have constructed a horizontal array of pickup coils to detect fluctuations in the magnetic field. These measurements give us information about the instabilities created in the gallium and will hopefully provide evidence for MRI. Design, calibration, and experimental results will be presented.

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