

Abstract Submitted
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Laboratory sodium experiments modeling astrophysical and geophysical MHD flows¹ DANIEL LATHROP, University of Maryland — Numerous systems are effected by rotation and magnetic fields. These include astrophysical and geophysical settings: stellar convective zones, planetary interiors, accretion disks, and galaxies as a whole, as well as laboratory plasma devices. Experiments in liquid sodium are becoming important to understanding instabilities leading to turbulence and enhanced transport where rotation and magnetic fields interact. There is theoretical and computational evidence for the importance of small magnetic fields in destabilizing differential rotation. This talk will describe the first direct observation of this instability, and important future directions in understanding MHD instabilities and turbulent transport. Beyond confirming established theory, these experiments are important to stimulate and benchmark new theoretical and computational tools to enable prediction of turbulent transport at physically realistic parameters.

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