

**E221-011**

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## Laboratory models of astrophysical and geophysical MHD flows

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Liquid sodium experiments are being used to better understand instabilities and turbulence where rotation and magnetic fields interact. These studies are useful as models for behavior in planetary cores (such as the Earth's) and in astrophysical settings (such as stars or ionized disks). We have observed a number of phenomena in these experiments, only some of which are understood. In particular, we have observed an instability in spherical Couette flow which is consistent with the magnetorotational instability, but from a turbulent background state. We have also observed oscillations in other spherical Couette flow experiments which are most likely a result of interactions between boundary layer instabilities and inertial (Coriolis restored) waves. While we have not yet observed dynamo magnetic field generation in experiments, it is useful to consider the relationship between these phenomena, and how similar experiments may yield dynamo action.