

Abstract Submitted  
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**Characterization of the Turbulent Electromotive Force in the Madison Dynamo Experiment** E.J. KAPLAN, C.B. FOREST, R.D. KENDRICK, N.Z. TAYLOR, UW Madison, E.J. SPENCE, ETH Zurich — The Madison Dynamo Experiment is a simply connected liquid sodium dynamo experiment. Two impellers driven by 100 horsepower motors drive the sodium with a mean velocity field that approximates either a t2s2 or t1s1 configuration. Two sets of inductive coils in a Helmholtz configuration provide seed fields in axial or transverse dipole and quadrupole fields. Previous experiments on the Madison Dynamo Experiment have shown the existence of growing mean fields in both Axial and Transverse dipole configurations. Both of these growth modes are attributed to turbulent EMFs in the experiment. A high current signal generator has been built to apply monochromatic, oscillating seed fields to the dynamo experiment. With this, the magnitudes and phases of the magnetic fields within the experiment can be compared to that predicted by laminar dynamo theory in order to characterize the effect of these EMFs.

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