Abstract Submitted
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The Madison Dynamo Experiment R.D. KENDRICK, C.B. FOREST, C.M. JACOBSON, M.D. NORNBERG, C.A. PARADA, E.J. SPENCE, University of Wisconsin-Madison, MADISON DYNAMO EXPERIMENT TEAM — A spherical dynamo experiment has been constructed at the University of Wisconsin-Madison's liquid-sodium facility. The experiment is designed to self-generate magnetic fields from flows of conducting metal. The apparatus consists of a 1 m diameter, spherical stainless steel vessel filled with liquid sodium. Two 100 Hp motors drive impellers which generate the flow. The motors have been operated up to 1200 RPM (60% of design specification), achieving a magnetic Reynolds number of 130, based on impeller tip speed. Various polarizations of external magnetic fields have been applied to the sodium, and the induced magnetic field has been measured by both internal and external Hall probe arrays. Cavitation of the sodium is monitored using an ultrasonic transducer and suppressed through pressurization. Operating parameters and performance of the experiment are presented. Future plans for the experiment are discussed.

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