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Analysis of First Plasma in Madison Plasma Dynamo Experiment CHRISTOPHER MARCHBANKS, DAVID WEISBERG, JOHN WALLACE, CHRISTOPHER COOPER, CARY FOREST, University of Wisconsin - Madison — The Madison Plasma Dynamo Experiment (MPDX) is designed to investigate the self-generation of magnetic fields in large astrophysical dynamos. Simulations show that an adequately large Magnetic Reynolds number is needed to produce a dynamo; therefore a large, hot, flowing and unmagnetized plasma is necessary. This poster presents an analysis of the first plasma in MPDX using electrodes that both heat and stir the plasma. A lanthanum hexaboride (LaB_6) electron source is used within the 3000 Gauss multipole cusp magnetic field and $\mathbf{E} \times \mathbf{B}$ stirring electrodes govern the plasma flow. This poster analyzes the performance of the efficient and fast power supply used in conjunction with the stirring electrodes to create a controllable flow using a feedback loop. In addition, the effectiveness of the LaB_6 electron source will be reported. Supported by the DOE and NSF.

Christopher Marchbanks
University of Wisconsin - Madison

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