



## **Magnetic field growth in the Madison Dynamo Experiment**

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The dynamo effect is a long-standing problem in magnetohydrodynamics. Because it is challenging to directly measure the flows of conducting fluid responsible for magnetic field generation, models are used to study the mechanisms at work. In this talk, I will discuss how the physics of magnetic field generation is being studied using the Madison Dynamo Experiment, a one-metre-diameter sphere of flowing liquid sodium. I will begin by discussing the development and design of the experiment, as well as results from the first experimental campaigns. Though the experiment has not yet achieved dynamo action, I will show that it has demonstrated brief periods of rapid magnetic field growth. The periods of growth are reproduced by simulations, which confirm that the high fluctuation levels of the experiment compromise its ability to dynamo. Modification strategies for the experiment, so that it will achieve dynamo action, will be presented.