

Abstract Submitted  
for the DPP11 Meeting of  
The American Physical Society

**Construction of vanes for helical pitch flow control in the Madison Dynamo Experiment**<sup>1</sup> M.M. CLARK, N.Z. TAYLOR, E.J. KAPLAN, A.M. RASMUS, K. RAHBARNIA, M.D. NORBERG, J.P. WALLACE, C.B. FOREST, Department of Physics, University of Wisconsin - Madison — The Madison Dynamo Experiment (MDE) comprises a 1 m diameter spherical chamber that contains liquid sodium flowing under the influence of two counter rotating impellers and vanes close to the vessel wall. MDE seeks to observe a magnetic field grow at the expense of kinetic energy in the liquid sodium flow. The most recent upgrade has been the addition of three vanes symmetrically located around each impeller to control the helical pitch of the flow and thus minimize the critical velocity at which the dynamo onset occurs. Each of the new vane/shaft assemblies can be rotated anywhere in a full circle about the shaft axis and then fixed to the desired position. The design and construction of the so called rotatable vanes will be discussed and illustrated today.

<sup>1</sup>This work is supported by the NSF/DOE partnership in plasma physics.

M.M. Clark  
Department of Physics, University of Wisconsin - Madison

Date submitted: 20 Jul 2011

Electronic form version 1.4