Abstract Submitted
for the DPP09 Meeting of
The American Physical Society

Resistive Wall Mode Study in a Line-tied Screw Pinch[1] CARLOS PAZ-SOLDAN, MATTHEW BROOKHART, GABRIEL MENGIN, DAVID HANNUM, ROCH KENDRICK, CARY FOREST, University of Wisconsin-Madison — Recent studies on the University of Wisconsin - Rotating Wall Machine (UW-RWM) are presented. The device has been constructed to test the hypothesis that the resistive wall mode (RWM) can be stabilized by two differentially rotating solid conducting walls. The RWM can rotate with (or lock to) either the stationary or the moving wall, but not both simultaneously. This allows stabilizing image currents to persist despite finite wall resistivity. This method has application to future breeder blanket designs, with the rotating wall replaced by flowing liquid metal. A rotating wall of 21cm diameter is under construction that will be capable of reaching 6000 rpm. Engineering design and performance of this wall will be presented. The timing and role of the MHD safety factor (q) on the RWM in the static wall case will also be presented. Recent spectroscopic studies of neutral and impurity interactions will be described. The UW-RWM studies the RWM through 120 radial, axial, and azimuthal flux loops in screw pinch geometry 1m long and 20cm across. Discharges up to 7kA can be maintained at flat top for 20ms or ramped by a pulse width modulation scheme.

[1]Supported by DOE and NSERC (Canada).

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Date submitted: 17 Jul 2009 Electronic form version 1.4