Abstract Submitted
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Stabilization of the Line-Tied Resistive Wall Mode by a Rotating Conducting Wall[1] C. PAZ-SOLDAN, W.F. BERGERSON, M.I. BROOKHART, R.D. KENDRICK, C.B. FOREST, University of Wisconsin-Madison — The Rotating Wall Machine is testing the hypothesis that the Resistive Wall Mode (RWM) can be stabilized by rotating conducting walls. These walls allow stabilizing image currents to persist despite finite wall resistivity. A rotating wall has been constructed that has demonstrated rotation speeds up to 280 km/h, which corresponds to a magnetic Reynolds number (R_m) of 5. Previous experiments have identified the RWM by varying the device wall and noting that the growth rate of the mode scaled with the wall resistive diffusion time. Observations also indicated that this mode was locked to the wall and external in character. With the rotating wall it is expected that at the highest speeds 25% more plasma current can be driven while maintaining stability to the RWM. For RWM unstable plasmas, it is expected that as the wall velocity increases the growth rate of the RWM will decrease. Design and preliminary data with this wall will be presented. Flow measurements using a Mach probe and their relationship to MHD stability will also be presented.

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