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Active Measurement of the Resistive Wall Mode Stability in Rotating DIII-D Plasmas[1] H. REIMERDES, A.M. GAROFALO, G.A. NAVRATIL, Columbia U., M.S. CHU, G.L. JACKSON, T.H. JENSEN, R.J. LA HAYE, J.T. SCOVILLE, E.J. STRAIT, GA, L.C. JOHNSON, M. OKABAYASHI, PPPL — Active measurements making use of resonant field amplification were applied to probe the effect of plasma rotation on the stability of the resistive wall mode (RWM) in DIII-D. Previous experiments have demonstrated the sustained rotational stabilization of DIII-D plasmas at values of beta that exceed the no-wall beta limit by more than 50%. Recent theory predicts that a dissipative interaction between the perturbed magnetic field and the rotating plasma fluid can provide such a stabilization mechanism. The resonant plasma response to an external magnetic field allows a quantitative test of RWM dispersion relations. The nature of the required dissipation is investigated in DIII-D experiments by detailed scans of various parameters, such as beta, plasma rotation and plasma-wall distance.

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