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Feedback Stabilization of the Resistive Wall Mode in Low-Rotation DIII-D Plasmas[1] M. OKABAYASHI, L.C. JOHNSON, PPPL, J. BIALEK, A.M. GAROFALO, G.A. NAVRATIL, H. REIMERDES, Columbia U., R.J. LA HAYE, J.T. SCOVILLE, E.J. STRAIT, DIII-D TEAM, GA — Recent DIII-D experiments have demonstrated that a resistive wall, in combination with sufficient plasma rotation, can stabilize the n=1 kink mode at beta values approaching the ideal-wall limit[1]. However, future burning plasmas may have little or no neutral beam heating to act as a source of toroidal angular momentum, so it becomes essential to develop feedback stabilization of the resistive wall mode with low rotation plasmas. Several techniques have been employed in DIII-D to reduce the toroidal rotation below the critical value for stabilization, including substitution of electron cyclotron heating for neutral beam heating, and braking by resonant (n=1) and non-resonant (n=3) magnetic perturbations. Direct measurements and stability calculations show that, in these low-rotation plasmas, the resistive wall mode can be stabilized by feedback control using DIII-D's 6-element external coil set.

[1] A.M. Garofalo *et al.*, Phys. Plasmas **9**, 1997 (2002).

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