RWM Stabilization Through Feedback Control,*
M. Okabayashi, M. Chance, H. Takahashi, Princeton Plasma Physics Laboratory, M.S. Chu, G.L. Jackson, R.J. La Haye, J.T. Scoville, E.J. Strait, General Atomics, A.M. Garofalo, G.A. Navratil, H. Reimerdes, Columbia University – The magnetic feedback process provides RWM stabilization by directly coupling the RWM as well as by increasing the plasma rotation via the error field reduction. A series of experiments has been carried out to assess these two processes quantitatively by producing lower rotation plasmas with the active $n=1$ resonant braking, non-resonant $n=3$ braking and/or electron cyclotron resonance heating. The nearly zero rotation target with the $n=1$ resonant braking showed that the feedback can increase $\beta_N$ 30% above the no-wall limit. The achieved values are consistent with theoretical predictions. The detailed process with various gain parameter scans will be discussed in comparison with the MARS code and a lumped parameter model [1].


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