

**Abstract Submitted for the Forty-Eighth Annual Meeting
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Category Number and Subject: 5.6.2. DIII-D Tokamak

Theory Experiment

Feedback Control of Resistive Wall Modes in Slowly Rotating DIII-D Plasmas,* M. Okabayashi, M.S. Chance, H. Takahashi, *PPPL*, A.M. Garofalo, H. Reimerdes, *Columbia U.*, Y. In, *FAR-TECH, Inc.*, M.S. Chu, G.L. Jackson, R.J. La Haye, E.J. Strait, *GA* – In slowly rotating plasmas on DIII-D, the requirement of RWM control feedback have been identified, using a MHD code along with measured power supply characteristics. It was found that a small time delay is essential for achieving high beta if no rotation stabilization exists. The overall system delay or the band pass time constant should be in the range of 0.4 of the RWM growth time. Recently the control system was upgraded using twelve linear audio amplifiers and a faster digital control system, reducing the time-delay from 600 to 100 μ s. The advantage has been clearly observed when the RWMs excited by ELMs were effectively controlled by feedback even if the rotation transiently slowed nearly to zero. This study provides insight on stability in the low-rotation plasmas with balanced NBI in DIII-D and also in ITER.

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