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Sorting Category: 5.1.1.2 (experimental)

Observation and Control of Resistive Wall Modes in DIII–D[1] E.J. STRAIT, M.S. CHU, L.L. LAO, R.J. LA HAYE, J.T. SCOVILLE, T.S. TAYLOR, A.D. TURNBULL, General Atomics, E. FREDRICKSON, M. OKABAYASHI, Princeton Plasma Physics Laboratory, A.M. GAROFALO, G.A. NAVRATIL, S.A. SABBAGH, Columbia University, E.A. LAZARUS, Oak Ridge National Laboratory — Ideal MHD theory predicts that, in a plasma where low-n kink modes would be stabilized by an ideal wall, non-zero wall resistivity leads to an unstable "resistive wall mode." Recent DIII–D experiments have shown stabilization of the resistive wall mode by sustaining beta greater than the no-wall limit for up to 200 ms, much longer than the wall penetration time $\tau_w \leq 2$ ms. These plasmas are typically terminated by an $m = 3$, $n = 1$ mode with the anticipated characteristics of the resistive wall mode as the rotation slows below a few kHz, indicating that rotation is crucial to stabilization. Future experiments will focus on active control using external coils and a new array of saddle loop detectors. Results of preliminary open-loop experiments will be presented.

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☐ Prefer Oral Session
☒ Prefer Poster Session

Special instructions: DIII–D Poster Session I (transport, turbulence, & stability), immediately following Scoville and immediately preceding M. Okabayashi (of PPPL)

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