

Abstract Submitted
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RWM Stabilization in DIII-D Using I-Coils With High Speed Actuators¹ G.L. JACKSON, A.G. KELLMAN, R.J. LA HAYE, J.T. SCOVILLE, E.J. STRAIT, General Atomics, J.M. BIALEK, A.M. GAROFALO, O. KATSUROHOPKINS, G.A. NAVRATIL, H. REIMERDES, Columbia Univ., Y. IN, FarTech, A. NAGY, M. OKABAYASHI, H. TAKAHASHI, PPPL — A new prototype actuator system driving 12 internal coils (I-coils) was used to help stabilize resistive wall modes (RWMs) up to $\beta_N \sim 4$. This approach is an alternative to rotational stabilization, which may not be adequate for fusion devices. VALEN modeling shows that as β_N approaches the ideal wall limit, higher bandwidth and lower system delay time are required to stabilize the larger RWM growth rates. This actuator system consists of 6 transistor amplifiers (dc-40 kHz), configured in 3 pairs, each driving 4 I-coils in an n=1 configuration. Initial experiments include the combination of I-coils for fast RWM stabilization and external C-coils with higher current capability for slower response dynamic error field correction. Effects of noise, maximum actuator current, and feedback system delay time on maximum achievable β_N will also be presented.

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