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Resonant Response of High Beta Plasmas to an Applied Error Field¹ J.T. SCOVILLE, E.J. STRAIT, R.J. LA HAYE, General Atomics, A.M. GAROFALO, G.A. NAVRATIL, Columbia U., L.C. JOHNSON, M. OKABAYASHI, PPPL — In recent resistive wall mode (RWM) experiments on the DIII-D tokamak, rotational stabilization of the mode is observed to be extremely sensitive to an error field. Applying an external error field can produce a resonant response, “error field amplification” (EFA), that causes loss of rotation and reduces the mode stabilization. Understanding the EFA effect can provide insight to better RWM feedback control and lead to sustained high beta operation. The structure of the EFA response measured with internal saddle coil arrays is helical, with primarily $n=1$ and $m=3$. The EFA effect appears to be a stable RWM, with a helical structure similar to the unstable RWM, although the applied error field pulse has no helicity and is primarily $m=1$. A discussion of observed EFA characteristics will be presented and compared to the predictions of some recent theoretical work.

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Prefer Oral Session
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