

Abstract Submitted
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Measurements of Islands and Screening with Resonant Magnetic Perturbations on DIII-D¹ M.W. SHAFER, E.A. UNTERBERG, A. WINGEN, J.M. CANIK, J.D. LORE, J.H. HARRIS, D.L. HILLIS, S.P. HIRSHMAN, ORNL, T.E. EVANS, N.M. FERRARO, GA, M.E. AUSTIN, U. Texas-Austin — Recent experiments on DIII-D have advanced the understanding of plasma response to resonant magnetic perturbations (RMPs) in low magnetic shear, inner wall limited, L-mode plasmas. Fine torque scans using mixtures of co- and counter-current neutral beam injection reveal that large RMP-induced n=1 islands are present at multiple mode-rational surfaces (m=2,3,4) at low rotation, but are completely screened at higher rotation. There is an observed nonlinear threshold for this torque, where small torque increments lead to a completely screened plasma response. Initial analysis indicates that near-zero $\omega_{e,\perp}$ is found not to be a sufficient condition for island formation, as it is observed to be approximately zero in cases where islands are completely screened. Comparisons are underway with two-fluid MHD modeling via the M3D-C1 code, 3D fluid transport with the EMC3-EIRENE code and nonlinear resistive MHD with the SIESTA code.

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