

Abstract Submitted
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Control of Internal Transport Barriers in DIII-D¹ C.M. GREENFIELD, E.J. DOYLE, E.J. SYNAKOWSKI, K.H. BURRELL, J.C. DEBOO, P. GOHIL, G.L. JACKSON, J.E. KINSEY, G.R. MCKEE, M. MURAKAMI, R.I. PINSKER, R. PRATER, C.L. RETTIG, G.M. STAEBLER, B.W. STALLARD, DIII-D National Fusion Facility — Several tools have been applied to the problem of internal transport barrier (ITB) control in DIII-D. Neutral beam counter-injection changes the dynamics of E×B shear turbulence stabilization by altering the relationship between the rotation and pressure gradient contributions so that they add rather than cancel. Impurity injection, primarily using neon, can reduce turbulent transport outside a preexisting ITB and facilitate barrier growth. Direct, localized electron heating can form an electron thermal barrier and establish conditions for a simultaneous ion ITB via α -stabilization of both long- and short-scale turbulence. Results of experiments utilizing each of these tools will be shown. The common thread connecting these results is that each enters a feedback loop where E×B shear and reduced turbulent transport reinforce each other.

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C.M. Greenfield
chuck.greenfield@gat.com
General Atomics

Special instructions: Transport (Core), immediately following JC DeBoo

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