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Progress Towards Control of Internal Transport Barriers in DIII-D[1] E.J. DOYLE, C.M. GREENFIELD, E.J. SYNAKOWSKI, K.H. BURRELL, J.C. DEBOO, P. GOHIL, G.L. JACKSON, J.E. KINSEY, G.R. MCKEE, M. MURAKAMI, R. PRATER, C.L. RETTIG, T.L. RHODES, G.M. STAEBLER, B.W. STALLARD, DIII-D National Fusion Facility — Sustaining ITBs and realizing predicted gains in fusion performance requires a capability to control both the spatial extent of the ITBs and the steepness of the gradients within the ITBs. Recent progress on DIII-D has focused on the development of control tools, including: (1) Use of counter-NBI (injection anti-parallel to plasma current) to produce ITBs with larger spatial extent and reduced gradients. (2) Use of impurity injection (primarily neon) to trigger improved confinement and facilitate barrier expansion, and (3) Use of localized direct electron heating with ECH, which can trigger an ITB in the electron thermal channel and also offers possibilities for gradient control. These control tools all operate by affecting the interplay between E×B shear and turbulence growth rates, so as to facilitate the formation of regions of reduced turbulence and transport.

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[X] Prefer Oral Session
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Special instructions: Oral presentation, immediately following R Prater

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