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Category Number and Subject:

Theory     Experiment

**Local Turbulence Suppression and Shear Flow Dynamics During  $q_{\min}$ -Triggered Internal Transport Barriers on DIII-D,\***  
M.W. Shafer, G.R. McKee, D.J. Schlossberg, *UW-Madison*, M.E. Austin, *U. Texas-Austin*, K.H. Burrell, *GA* – Long-wavelength turbulence ( $k_{\perp}\rho_i < 1$ ) is locally suppressed simultaneously with a rapid but transient increase in local poloidal flow shear at the appearance of low-order rational  $q_{\min}$  surfaces in negative central shear discharges. At these events, reductions in energy transport are observed and Internal Transport Barriers (ITBs) may form. Application of off-axis ECH slows the  $q$ -profile evolution and increases  $\rho_{q_{\min}}$ , both of which enhance turbulence measurements using a new high-sensitivity large-area (8x8) 2D BES array. The measured transient turbulence suppression is localized to the low-order rational surface ( $q_{\min} = 2, 5/2, 3, \text{etc.}$ ). Measured poloidal flow shear transiently exceeds the turbulence decorrelation rate, which is consistent with shear suppression. The localized suppression zone propagates radially outward, nearly coincident with the low-order surface.

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