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[ ] Theory [X] Experiment

Local Turbulence Suppression and Flow Shear Dynamics During q_{min}-Triggered Internal Transport Barriers,* M.W. Shafer, G.R. McKee, D.J. Schlossbberg, *U. Wisc.-Madison*, M.E. Austin, *U. Texas-Austin*, R.E. Waltz, and J. Candy, *GA* – Turbulence is observed to transiently decrease locally during the formation of internal transport barriers (ITBs) following the appearance of low-order rational q_{min} surfaces in negative central shear discharges on DIII-D. Simultaneously, increased poloidal flow shear is observed. To further study this phenomenon, localized 2D density fluctuation measurements of turbulence and turbulence flow were obtained over $0.3 < r/a < 0.7$ via the high-sensitivity beam emission spectroscopy diagnostic. Both the reduction in fluctuations and the poloidal velocity shear are found to propagate radially outward at about 1 m/s. Initial observations suggest that these effects follow the $q=2$ surface. Related GYRO simulations suggest transient zonal flows form near the $q=2$ surface to trigger these ITBs. High-frequency poloidal velocity measurements will be used to examine this mechanism.

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