Abstract Submitted
for the DPP07 Meeting of
The American Physical Society

Local Turbulence Suppression and Flow Shear Dynamics During q_{min}-Triggered Internal Transport Barriers[1] M.W. SHAFER, G.R. MCKEE, D.J. SCHLOSSBERG, U. Wisc.-Madison, M.E. AUSTIN, U. Texas-Austin, R.E. WALTZ, J. CANDY, General Atomics — 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 $0.3 < \mathrm{r/a} < 0.7$ 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.

[1]Supported by the US DOE under DE-FG02-89ER53296, DE-FG03-97ER54415, and DE-FG03-95ER54309.

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Date submitted: 21 Jul 2007 Electronic form version 1.4