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Turbulence Suppression Dynamics During Internal Transport Barrier Formation on DIII–D[1] G.R. MCKEE, R.J. FONCK, M. JAKUBOWSKI, University of Wisconsin, Madison, K.H. BURRELL, C.M. GREENFIELD, General Atomics — Radially localized measurements of density fluctuations have been obtained in high performance Negative Central Shear (NCS) Plasmas on DIII–D with the beam emission spectroscopy (BES) diagnostic. Spatially (Δ r$\approx$1–2 cm) and temporally (Δ t$\approx$50 ms) resolved fluctuation measurements during onset of the high performance phase of such discharges are in qualitative agreement with predictions that describe an outward moving turbulence suppression front that proceeds slowly at a velocity governed by the local neoclassical diffusivity [Lebedev, Diamond, Phys. Plasmas **4**, 1087 (1997)]. Interestingly, suppression of fluctuations is observed well outside of the internal transport barrier, challenging theories of barrier formation. One possible explanation is the reduction of local pressure gradients in the region outside the transport barrier, which could reduce the turbulence drive. Radial correlation lengths are near 1 cm. but decrease during turbulence suppression. Turbulence decorrelation times are computed and compared with measured E$\times$B shearing rates.

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