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Microturbulence Dynamics Associated with Steady State High Performance Discharges in DIII-D[1] C.L. RETTIG, W.A. PEEBLES, T.L. RHODES, UCLA, K.H. BURRELL, C.M. GREENFIELD, General Atomics, E.J. SYNAKOWSKI, Princeton Plasma Physics Laboratory, B.W. RICE, B.W. STALLARD, Lawrence Livermore National Laboratory — Although steady state conditions have been achieved in discharges with H-mode confinement and normalized beta of 3–4, various phenomena display marked evolution prior to realization of the steady state. The plasma passes through a phase characterized by transient jumps in temperature and rotation and rapid suppressions in fluctuations as the q-profile evolves and the core rotation and $E \times B$ shearing rate increase. Such evidence is consistent with features displayed in a theoretical model for the dynamical evolution of the internal transport barrier (ITB) which predicts similar bursts in local variables during expansion of the ITB. Coherent electrostatic fluctuations invariably display rapid chirping during this phase associated with the ITB. Improved understanding of these spontaneous phenomena will lead to better control and more reliable steady state performance.

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☐ Prefer Oral Session
☒ Prefer Poster Session

Special instructions: DIII–D Poster Session I (transport, turbulence, & stability), immediately following Doyle

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