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The Dynamics of Turbulence and Shear Flow Approaching the L-H Transition[1] Z. YAN, G.R. MCKEE, U. Wisc-Madison, J.A. BOEDO, D.L. RUDAKOV, G.R. TYNAN, P.H. DIAMOND, UCSD, R.J. GROEBNER, T.H. OSBORNE, General Atomics, G. WANG, L. SCHMITZ, UCLA — Comprehensive 2D turbulence and turbulent flow measurements have been obtained before, during, and after the L-H transition during an ion gyro-radius scan in DIII-D to understand if the strong threshold dependence on B_T is connected to turbulence behavior. Other non-dimensional parameters (ν^*, q_{95}, β) were kept nearly constant at the pedestal top. The amplitude of long wavelength density fluctuations, measured with the 2D BES array, is found to scale approximately with ρ^*. A mean shear flow layer is observed near $r/a \sim 0.92$ with a shearing rate exceeding the local turbulence decorrelation rate. Velocimetry shows that the GAM, which peaks near $r/a \sim 0.9$, appears a few hundred ms before the L-H transition, and decays in amplitude approaching the transition, while a lower-frequency flow structure increases in amplitude during this period. New measurements of the density dependence of the turbulence-zonal flow system will also be presented.

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