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Turbulence and sheared flow dynamics during q95 and density scans across the L-H transition on DIII-D[1] ZHENG YAN, GEORGE MCKEE, University of Wisconsin-Madison, PUNIT GOHIL, General Atomics, LOTHAR SCHMITZ, University of California Los Angeles, DAVID ELDON, General Atomics, BRIAN GRIERSON, PPPL, MATT KRIETE, University of Wisconsin-Madison, TERRY RHODES, University of California Los Angeles, CRAIG PETTY, general atomics — Measurements of long wavelength density fluctuation characteristics have been obtained in the edge of Deuterium (D) plasmas across the L-H transition on DIII-D during density and q95 scans. The relative density fluctuation amplitude measured by Beam Emission Spectroscopy (BES) increases with higher q95. The power threshold is found to increase with plasma current (i.e., lower q95) but with complex density dependence: the largest increase of P_{LH} is seen at n_e~3.2e19 m^{-3}. Interestingly, a dual counter-propagating mode is observed for cases when P_{LH} is low. The existence of the dual mode is correlated with increasing flow shear. Estimation of the turbulence kinetic energy transfer from turbulence to the flow increases prior to the transition. The complex behaviors of the turbulence characteristics and dual frequency modes interactions impact the flow shear generation, the transition process and the power threshold scaling.

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