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Comparison of Fluctuation Characteristics in High qmin and Low qmin Steady-State Scenario Plasmas on DIII-D[1] YAN ZHAO, Z. YAN, G.R. MCKEE, U. of Wisconsin-Madison, C.T. HOLCOMB, LLNL, J.R. FERRON, General Atomics, W.W. HEIDBRINK, UC-Irvine — Experiments investigating the impact of the safety factor (q) profile on transport and confinement have been carried out in steady-state scenario plasmas on DIII-D. The minimum safety factor was varied between $q_{min} \sim 1.4$ and $q_{min} \sim 2.3$ (q_{95}=6.5) using off-axis neutral beam current drive and early beam injection during moderately high beta plasmas ($\beta_N \sim 2.3$.) The steady-state scenario plasmas with highq_{min} have significantly lower global energy confinement. Long wavelength density fluctuations are measured with a 2D BES array located at $\rho \sim$ 0.35-0.85 (scanned during a set of three repeat discharges). The normalized ($\tilde{n}/n$) density fluctuation amplitude integrated over 50-2500 kHz is found to be nearly double at higher q_{min} in the region of $0.5 < \rho < 0.85$, which is consistent with the lower confinement at high q_{min}. In addition, a set of discrete coherent modes associated with energetic particle driven instabilities is observed in this frequency range.

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