Abstract Submitted
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Radial Correlation Length of Density Fluctuations in DIII-D Plasmas[1] G. WANG, W.A. PEEBLES, T.L. RHODES, E.J. DOYLE, L. SCHMITZ, A.E. WHITE, L. ZENG, UCLA, R. NAZIKIAN, PPPL, G.R. MCKEE, U. Wisc. — The radial correlation length (L_r) of density fluctuations, which is directly related to the radial scale length of the fluctuations, is an important quantity for understanding turbulent transport in tokamak plasmas. In DIII-D, recent upgrades of the UCLA correlation reflectometer system allow high spatial resolution L_r measurement in both low and high density gradient regions. Initial observations is presented, including: (1) In the OH plasma core, $L_r$decreases as major radius increases, but inferred radial fluctuation scale length $k_r\rho_s$ (ρ_s is the ion gyroradius using T_e and $k_r = 2/L_r$ for a Gaussian radial correlation length) increases outwards; (2) In the plasma core, $k_r\rho_s$ of the L-mode, QH-mode, and hybrid steady-state H-mode are comparable, and more than 2-3 times bigger than those in OH plasmas; (3) In both L- and QH-mode core, little change was observed in L_r as plasma rotation is varied significantly by NB torque change. Initial results from H-mode edge pedestal will also be presented.

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