

Abstract Submitted
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Transport Analysis and Turbulent Ion Fluctuation Measurements with UF-CHERS at $T_e/T_i \sim 1$ in DIII-D¹ DINH TRUONG, GEORGE MCKEE, ZHENG YAN, University of Wisconsin - Madison, CHOONGKI SUNG, TERRY RHODES, UCLA, STERLING SMITH, COLIN CRYSTAL, General Atomics, SHAUN HASKEY, PPPL, GARY STAEBLER, General Atomics, RAYMOND FONCK, University of Wisconsin - Madison, DIII-D TEAM — Radial profiles of multi-field fluctuation measurements (n_C , T_i , V_{tor}) were obtained with the Ultra Fast Charge Exchange Recombination Spectroscopy (UF-CHERS) diagnostic in a DIII-D experiment studying L-mode turbulent transport at near-unity T_e/T_i ratio. For a 10-20% increase in T_e/T_i using electron cyclotron heating, analysis of UF-CHERS measurements revealed a radially varying increase in normalized T_i fluctuations of ~ 1 -3% of the equilibrium value, a corresponding decrease in V_{tor} fluctuations, and little change in n_C fluctuations. The same trend is also observed at increased density/collisionality. ONETWO transport analysis found increased electron and ion energy transport with larger T_e/T_i , consistent with the measured increase in T_e and T_i fluctuations. TGLF analysis showed increased growth rate for the most dominant modes at higher T_e/T_i over the wavenumber range ($0.1 \leq k_{\theta} \rho_s \leq 10$) encompassing UF-CHERS' sensitivity. TGLF also calculated increased T_i fluctuations at higher T_e/T_i . Further comparisons between experimentally inferred transport, multifield turbulence measurements, and transport models will be presented.

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