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Electron Thermal Transport and Multi-scale Turbulence in Low Collisionality H-mode Plasmas,* L. Schmitz, *UCLA,* C. Holland, *UCSD,* T.L. Rhodes, G. Wang, J.C. Hillesheim, L. Zeng, W.A. Peebles, E.J. Doyle, *UCLA*; G.R. McKee, *U Wisc.*; A.E. White, *MIT*; K.H. Burrell, J.C. DeBoo, J. deGrassie, C.C. Petty, *GA* –
Electron thermal transport and the role of local ITG/TEM/ETG-scale core turbulence are investigated in high temperature DIII-D H-mode/QH-mode plasmas at ITER-relevant electron to ion temperature ratio ($0.5 \leq T_e/T_i \leq 1.2$) and collisionality ($\nu_e^* \sim 0.05$). The T_e/T_i ratio is varied using central ECH ($P_{ECH} \leq 2.7$ MW). Experimentally determined H-mode electron transport fluxes and turbulence wavenumber spectra are directly contrasted with nonlinear gyrokinetic (GYRO) simulations results. The effects of $\boldsymbol{E \times B}$ shear on core ITG/TEM-scale turbulence are studied at low and high rotation, with the latter leading to reduced electron thermal transport across the entire minor radius. GYRO simulations indicate that a significant portion of the remaining H-mode electron heat flux results directly from short-scale TEM/ETG turbulence.

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