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[ ] Theory [x] Experiment

Dependence of Electron and Ion Transport on T_e/T_i in Low Collisionality QH-mode Plasmas,* L. Schmitz, T.L. Rhodes, J.C. Hillesheim, W.A. Peebles, G. Wang, L. Zeng, *UCLA*; C. Holland, *UCSD*; K.H. Burrell, J.C. DeBoo, S.P. Smith, R. Prater, J.S. deGrassie, G.M. Staebler, *GA*; G.R. McKee, *U Wisc*; W.M. Solomon, *PPPL* – Core electron/ion thermal transport and its dependence on ITG/TEM/ETG-scale turbulence are examined in high temperature, strongly rotating QH-mode plasmas, at ITER-relevant collisionality ($\nu_e^* \sim 0.05$). To simulate central electron heating by α-particles, ECH has been used to achieve $0.6 \leq T_e/T_i \leq 1.1$. ITG/TEM-scale density fluctuations remain virtually unchanged, while electron temperature fluctuations, and gyroBohm-normalized electron and ion diffusivities increase with T_e/T_i. Linear stability calculations support a transition to a TEM-dominated regime due to increased T_e/T_i and a reduced ion temperature gradient R/L_{Ti} with ECH. Initial GYRO nonlinear calculations will be shown. At reduced toroidal rotation, ITG-dominated QH-mode plasmas [$T_e(0)/T_i(0) \sim 0.6$] exhibit 20% increased global energy confinement time and β_n,

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