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Indirect evidence for a hybrid ITG/TEM scenario in nonlinear simulations of a DIII-D near-edge L-mode plasma[1] TOM NEISER, UCLA, FRANK JENKO, MPI- Garching, TROY CARTER, LOTHAR SCHMITZ, PAUL CRANDALL, UCLA, GABRIELE MERLO, UT Austin, DANIEL TOLD, ALEJANDRO BANON NAVARRO, MPI- Garching, GEORGE MCKEE, ZHENG YAN, UW-Madison — The near-edge of L-mode plasmas is an important testing ground for our understanding of microturbulence. We present recent results from gyrokinetic simulations of DIII-D near-edge L-mode plasmas with the gyrokinetic turbulence code GENE. Nonlinear simulations at $\rho = 0.90$ previously matched the experimental heat flux by increasing the electron temperature gradient by 23% and including $\mathbf{E} \times \mathbf{B}$ shear effects (arXiv:1808.06607). We present similar simulations at a larger radial position of $\rho = 0.95$ that match the experimental heat flux by including $\mathbf{E} \times \mathbf{B}$ shear effects and leaving the electron temperature gradient unchanged. We also revisit simulations at $\rho = 0.90$, since they show an unexpected sensitivity of the total heat flux to small changes in electron temperature gradient. We present indirect evidence that this behavior may be caused by a hybrid ion temperature gradient (ITG)/ trapped electron mode (TEM) scenario, which was unexpected due to linear stability of ITG modes. This tentatively suggests that TEM modes may be nonlinearly exciting the linearly stable ITG modes. This result may also be important for spherical tokamaks, where ITG modes are more often linearly stable than in conventional tokamaks.

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