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ITG and TEM Turbulence in DIII-D L-mode Discharges[1] J.C. DEBOO, C.C. PETTY, G.M. STAEBLER, General Atomics, E.J. DOYLE, T.L. RHODES, L. SCHMITZ, G. WANG, A.E. WHITE, UCLA, G.R. MCKEE, U. Wisc.-Madison — An experiment has been designed to discriminate between the effects of ion temperature gradient (ITG) and trapped electron mode (TEM) turbulence by creating discharges where one of these modes is clearly dominant. With the aid of the GKS and TGLF linear gyrokinetic stability codes, a low-density L-mode target discharge with electron cyclotron heating has been identified where TEM modes are calculated to dominate. By replacing electron cyclotron heating power with neutral beam power, ITG modes are expected to become dominant. The TEM threshold condition will also be tested by varying the local electron temperature gradient scale length to values above and below the threshold condition by employing modulated ECH near the plasma mid-radius. Results of the experiment, including comparison of turbulence measurements at low (ITG) and intermediate (TEM) wavenumbers with gyrokinetic stability code predictions of drift wave spectra and threshold predictions, will be shown.

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