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Survey of Driftwave Linear Growth Rate Sensitivity to Gradient Scale Lengths[1] J.C. DEBOO, G.M. STAEBLER, General Atomics — Previous experiments in DIII-D were performed to locally vary a/L_{Te} using ECH in order to vary the turbulence associated with the electron temperature gradient, particularly in the intermediate wavenumber regime where trapped electron modes (TEMs) dominated the turbulence. For these low density L-mode discharges, calculations with TGLF of normalized driftwave linear growth rates γ indicate that they are largest near $k_y = k_\theta \rho_s = 0.8$ and are most sensitive to a/L_{Te} well above the marginal condition for TEM activity. The growth rates do not always vary smoothly with gradient scale lengths. Systematic variation of a/L_{Te} by a factor of 2, the range in experiment, shows that γ smoothly decreases with decreasing a/L_{Te} at $k_y = 0.8$ until nearing the marginal value. In this regime γ is sensitive to a/L_{Te}, a/L_{Ti} and a/L_{ne} such that γ can vary up to a factor of 2 within typical experimental uncertainties of the gradient scale lengths. Strong variation of growth rate with small changes in gradient scale length can also be found at lower k_y where γ is most sensitive to a/L_{Ti}.

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