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Utilizing Plasma Perturbations to Differentiate Between Theory Based Transport Models[1] D.P. SCHISSEL, R.E. WALTZ, K.H. BURRELL, J.C. DEBOO, J.E. KINSEY, T.C. LUCE, C.C. PETTY, P.A. POLITZER, H.E. ST. JOHN, General Atomics, E. FREDRICKSON, PPPL, M. KISSICK, U of Wisconsin — ITER model validation activity has not found large variations in the steady-state temperature profiles predicted from various models with agreement in W_T in the 15% to 25% range. In contrast, perturbative experiments offer a more sensitive technique to probe the plasma since the models will be close to the experimental solution (χ_{PB}) but will approach that solution with a dramatically different slope $\chi_{inc} = \Delta P/SnT/(\Delta(dT/dr)/T)$ due to their different stiffness (χ_{inc}/χ_{PB}). We have performed model based simulations on potential DIII–D target discharges using 1 MW modulated ECH deposited at the halfradius. The IFS/PPPL model predicts a T_e response in phase at the deposition location and a T_e, T_i response that is 180° out of phase near the plasma center. The results and implications of these simulations will be shown as well as comparisons of modulated ECH experiments on DIII–D to predictions of transport models which will allow us to experimentally distinguish between models.

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