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Theory Experiment

Evaluating Pedestal Gradients and Scale Lengths Without Functional Fits in Order to Test for Non-diffusive Transport Processes,* D.P. Eldon, G.R. Tynan, *UCSD*; R.J. Groebner, T.H. Osborne, B.D. Bray, R.L. Boivin, *GA*; R. Nazikian *PPPL* – The advent of the recent spatial resolution upgrade to the edge Thomson scattering diagnostic at DIII-D allows re-examination of methods for measuring electron density and temperature scale lengths. The modified hyperbolic tangent fit is widely used, however, this function is clearly inappropriate in some situations such as when density profiles are distorted by applied resonant magnetic perturbations (RMPs). In these cases, a flattening of the density profile is observed at or near the separatrix while the RMP is applied. However, no similar structure is observed in the temperature profile so far. Furthermore, the tanh fit is based on a diffusive model and recently observed differences between the tanh fit and measured profiles using newly available high spatial resolution data are revealing more subtle transport processes at the mm scale.

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