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DIII–D Experimental Comparisons with Two-Fluid Drift Braginskii Simulations[1] D.M. THOMAS, R.J. GROEBNER, T.N. CARLSTROM, T.H. OSBORNE, K.H. BURRELL, General Atomics — In our DIII–D H–mode studies a key question is: What are the conditions or control parameters needed to begin the formation of the E_r shear layer and trigger the L to H transition? Two candidates which appear to correlate with the transition are the magnetic/diamagnetic 'alpha' parameters α_{mhd} and α_{dia} derived from 3-D flux-tube numerical simulations of the electromagnetic Braginskii equations. Since edge transport barrier physics is dominated by local, rather than global, variables, we have developed a routine to evaluate α_{mhd} and α_{dia} based on local values of the relevant input parameters for any DIII–D timeslice. The experimental values of α_{mhd} and α_{dia} are comparable to those expected from the model However, the dynamical evolution of the α's during the L to H transitions for oscillating L↔H DIII–D discharges (no particular increase in α_{mhd} prior to the transition and a relatively low α_{dia} at the transition) appears to be inconsistent with the model predictions. Comparisons for various other DIII–D conditions will be presented along with implications for further theory/experiment improvements.

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☐ Prefer Oral Session
☒ Prefer Poster Session

Thomas

Special instructions: DIII–D Poster Session I (transport, turbulence, & stability), immediately following Carolipio

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