Abstract Submitted
for the DPP17 Meeting of
The American Physical Society

Gyrokinetic analysis of pedestal transport[1] MIKE KOTSCHENREUTHER, X LIU, DR HATCH, LJ ZHENG, S MAHAJAN, Univ of Texas, Austin, A DIALLO, PPPL, RJ GROEBNER, GA, AE HUBBARD, JW HUGHES, MIT, CF MAGGI, S SAARELMA, JET CONTRIBUTORS[2], CCFE — Surprisingly, basic considerations can determine which modes are responsible for pedestal energy transport (e.g., KBM, ETG, ITG, MTM etc.). Gyrokinetic simulations of experiments, and analysis of the Gyrokinetic-Maxwell equations, find that each mode type produces characteristic ratios of transport in the various channels: density, heat and impurities. This, together with the relative size of the driving sources of each channel, can strongly constrain or determine the dominant modes causing energy transport. MHD-like modes are not the dominant agent of energy transport - when the density source is weak as is often expected. Drift modes must fill this role. Detailed examination of experimental observations, including frequency and transport channel behavior, with simulations, demonstrates these points. Also see related posters by X. Liu, D.R. Hatch, and A. Blackmon.

[1]Work supported by US DOE under DE-FC02-04ER54698, DE-FG02-04ER54742 and DE-FC02-99ER54512 and by Eurofusion under grant No. 633053.
[2]See the author list of X. Litaudon et al 2017 Nucl. Fusion 57 102001

Xing Liu
Univ of Texas, Austin

Date submitted: 14 Jul 2017 Electronic form version 1.4