Abstract Submitted
for the DPP13 Meeting of
The American Physical Society

Changes in Particle Transport as a Function of Collisionality and Rotation[1] S. MORDIJCK, X. WANG, College of William & Mary, E.J. DOYLE, L. ZENG, L. SCHMITZ, T.L. RHODES, UCLA — The performance of future tokamaks depends strongly on enhanced density peaking at low collisionality, which has been attributed to changes in turbulence regime from the ion temperature gradient (ITG) to trapped electron mode (TEM) regime and related changes in toroidal rotation [1]. In DIII-D the measured density peaking in H-mode discharges remained fixed during a collisionality scan, and no difference in the density peaking was observed by changing the turbulence regime from ITG to TEM-dominated (as inferred from TGLF linear gyrofluid stability calculations). Moreover, we could not discern any effect on density peaking from changes in the toroidal rotation. We will present the characteristics of low and intermediate-k fluctuations in both regimes, as well as the dependence of the transport coefficients D and v_r (extracted from perturbative particle transport measurements) on collisionality, turbulence regime/instability growth rates, and $E \times B$ shear.

[1] C. Angioni, et al., Nucl. Fusion **52**, 114003 (2012).

[1]Work supported by the US Department of Energy under DE-SC0007880, DE-FG02-08ER54984 and DE-FC02-04ER54698.

Saskia Mordijck
College of William & Mary

Date submitted: 12 Jul 2013 Electronic form version 1.4