Abstract Submitted
for the DPP07 Meeting of
The American Physical Society

Particle transport and density peaking at low collisionality on Alcator C-Mod[1] M. GREENWALD, MIT-Plasma Science & Fusion Center, J.W. HUGHES, MIT, D. MIKKELSEN, PPPL, J. TERRY, MIT — While H-modes tend to have very flat density profiles, modest density peaking is advantageous for fusion performance. Thus robust pinch mechanisms that could allow operation with peaked profiles, in the absence of any internal particle source, are of considerable interest. Recent experiments on C-Mod[1], at low collisionality, show just such peaking and are quantitatively consistent with earlier results from ASDEX-U[2] and JET[3]. By extending the range in machine size, these data break the covariance between collisionality and n/n_G, the density normalized to the density limit and strongly support the primary role of collisionality in determining the profile. The implication is that ITER will have density profiles with $n_e(0)/\langle n_e\rangle \simeq 1.4-1.6$. The C-Mod data also show a small but statistically significant dependence of the peaking factor on the edge safety factor, q. The effect is to increase the peaking by no more than 10% when q is raised from 3.5 to 5.Initial studies of gyrokinetic simulations for these discharges will be shown. [1]M. Greenwald, submitted to Nucl. Fusion, 2007 [2]C. Angioni, et al., PRL 90, 205003, 2003 [3]H.Weisen, Nucl. Fusion 45, L1, 2005

[1]Supported by USDoE award DE-FC02-99ER54512

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Date submitted: 20 Jul 2007 Electronic form version 1.4