Abstract Submitted
for the DPP06 Meeting of
The American Physical Society

H-mode pedestal behavior in low collisionality regimes on Alcator C-Mod[1] J.W. HUGHES, A. HUBBARD, B. LABOMBARD, J.L. TERRY, K. MARR, R. MCDERMOTT, MIT Plasma Science and Fusion Center, W.L. ROWAN, I.O. BESPAMYATNOV, Fusion Research Center, UT-Austin — H-mode experiments on the Alcator C-Mod tokamak have exploited a wide range of operational parameters, in order to make expanded studies of pedestal structure, edge relaxation mechanisms and the related level of global confinement. Three specific regimes have received increased attention in recent studies: high triangularity ($\delta_{\rm lower} \approx 0.75$), high toroidal field ($B_T \approx 8$T), and reversed B_T. Operation in these regimes has yielded pedestal temperatures of nearly 1keV, giving relatively low values for edge collisionality, $\nu^\star < 1$. At low $\nu^\star$, H-modes do not favor the steady state enhanced-D_α (EDA) regime, but tend either to exhibit edge-localized modes (ELMs) or to be transiently ELM-free. In these regimes we study the temporal behavior of pedestal density and temperature profiles (especially their widths and gradients) and compare to that in the well-characterized EDA. Of particular interest is whether a ballooning-like scaling for pressure gradient observed in the EDA H-mode edge persists in less collisional pedestals.

[1]Supported by USDoE grants DE-FC02-99-ER54512, DE-FG03-97-ER54415.

Jerry Hughes
MIT PSFC

Date submitted: 23 Jul 2006 Electronic form version 1.4