

Abstract Submitted
for the DPP07 Meeting of
The American Physical Society

H-mode performance and pedestal studies with enhanced particle control on Alcator C-Mod¹ J.W. HUGHES, B. LABOMBARD, M. GREENWALD, A. HUBBARD, B. LIPSCHULTZ, K. MARR, R. MCDERMOTT, M. REINKE, J.L. TERRY, MIT PSFC, W.L. ROWAN, I.O. BESPAMYATNOV, Fusion Research Center, UT-Austin — H-mode density control studies are extended on the Alcator C-Mod tokamak with the recent implementation of an upper chamber cryopump. Experiments have examined the effects of strong neutral pumping on H-mode edge pedestal profiles and core fueling, in varied magnetic topology (both lower and upper null, and close to balanced double null), and over a significant range in edge density. As in prior H-mode puffing experiments, these studies are meant to examine H-mode fueling in discharges with edge neutral opacity approximating that expected in ITER. Significant reduction of edge collisionality is observed with enhanced pumping, concurrent in many cases with high H-mode performance and core density peaking. Cryopumping provides a new tool for obtaining steady H-modes with sustained low collisionality, allowing for continued exploration of pedestal fueling studies, critical-gradient behavior of plasma profiles and access conditions to H-mode regimes (e.g. EDA, ELM-free, ELM_y).

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

Jerry Hughes
MIT PSFC

Date submitted: 20 Jul 2007

Electronic form version 1.4