Abstract Submitted for the DPP11 Meeting of The American Physical Society

Progress in characterizing pedestal stability on Alcator C-Mod1 J.W. HUGHES, R.M. CHURCHILL, I. CZIEGLER, E.M. DAVIS, A. DOMINGUEZ, P. ENNEWER, D. ERNST, A.E. HUBBARD, B. LIPSCHULTZ, Y. MA, J.R. WALK, S.M. WOLFE, MIT Plasma Science and Fusion Center, P.B. SNYDER, T. OSBORNE, General Atomics, X. XU, Lawrence Livermore National Laboratory, L. SUGIYAMA, MIT Laboratory for Nuclear Science — Experimental studies on Alcator C-Mod explore pedestal structure and edge relaxation mechanisms primarily in three high confinement regimes: ELMy H-mode, EDA H-mode and I-mode. Extensive scans of B\textsubscript{T}, I\textsubscript{P}, n\textsubscript{e}, P\textsubscript{net} and shaping parameters have been carried out in these regimes, allowing the characterization of the operating space for ELMs as well as benign pedestal relaxation mechanisms (e.g. quasi- and weakly coherent modes). Well resolved edge profiles and accurate equilibrium reconstructions are produced from typical discharges, enabling evaluation of edge stability using various computational tools, such as ELITE, BOUT++, M3D and GS2. Relationships among dominant edge instabilities, radial transport and pedestal structure will be discussed.

\footnote{Supported by US DoE Award DE-FC02-99-ER54512.}

J.W. Hughes
MIT PSFC

Date submitted: 12 Jul 2011