

Abstract Submitted
for the DPP13 Meeting of
The American Physical Society

Reduction of Core Turbulence in I-mode Plasmas at Alcator C-Mod¹ A.E. WHITE, MIT, M. BARNES, UT Austin, A. DOMINGUEZ, PPPL, M. GREENWALD, MIT, N.T. HOWARD, UCSD, A.E. HUBBARD, J.W. HUGHES, MIT, D.R. MIKKELSEN, PPPL, F.I. PARRA, M.L. REINKE, C. SUNG, J. WALK, D.G. WHYTE, MIT — Core turbulent fluctuations ($0.40 < r/a < 0.95$) are reduced in the high confinement regime, I-mode, at Alcator C-Mod. Long wavelength density fluctuation levels are observed to decrease from L-mode levels by up to 30%, while long wavelength electron temperature fluctuation levels are observed to decrease by up to 70%. This reduction in core turbulence is correlated with the increases in confinement in I-mode. During some L-I transitions, density fluctuations in the core ($r/a \sim 0.5$) and near the top of the Te pedestal ($r/a \sim 0.95$) are both reduced prior to the reduction of low-frequency edge turbulence ($r/a \sim 0.99-1.0$), and prior to the onset of the edge-localized weakly coherent mode (WCM) ($r/a \sim 0.99-1.0$). This result contrasts typical observations of confinement transitions (I-mode and H-mode) where changes in edge turbulence occur prior to changes in core turbulence

¹Supported by USDoE: DE-FC02-99ER54512 and DE-SC0006419.

A. E. White
MIT

Date submitted: 11 Jul 2013

Electronic form version 1.4