Abstract Submitted
for the DPP08 Meeting of
The American Physical Society

Transport Studies in Alcator C-Mod ITB Plasmas[1] C.L. FIORE, P.T. BONOLI, D. ERNST, M.J. GREENWALD, A. INCE-CUSHMAN, L. LIN, E.S. MARMAR, M. PORKOLAB, J.E. RICE, S. WUKITCH, MIT-PSFC, W. ROWAN, I. BESPAMYATNOV, P. PHILLIPS, FRC-UTA — Internal transport barriers occur in C-Mod plasmas that have off-axis ICRF heating and also in Ohmic H-mode plasmas. These ITBs are marked by highly peaked density and pressure profiles, as they rely on a reduction of particle and thermal flux in the barrier region which allows the neoclassical pinch to peak the central density without reducing the central temperature. Enhancement of several core diagnostics has resulted in increased understanding of C-Mod ITBs. Ion temperature profile measurements have been obtained using an innovative design for x-ray crystal spectrometry and clearly show a barrier forming in the ion temperature profile. The phase contrast imaging (PCI) provides limited localization of the ITB related fluctuations that increase in strength as the central density increases. Simulation of triggering conditions, integrated simulations with fluctuation measurements, parametric studies, and transport implications of fully ionized boron impurity profiles in the plasma are under study. A summary of these results will be presented.

[1]Work supported by US-DoE DE-FC02-99ER54512.

Catherine L. Fiore
MIT-PSFC

Date submitted: 17 Jul 2008 Electronic form version 1.4