

Abstract Submitted
for the DPP10 Meeting of
The American Physical Society

Time-Dependent Simulations of Alcator C-Mod ITER-like Discharges C. KESSEL, D. MIKKELSEN, S. SCOTT, PPPL, S. WOLFE, I. HUTCHINSON, P. BONOLI, C. FIORE, A. HUBBARD, J. HUGHES, Y. LIN, E. MARMAR, M. REINKE, S. WUKITCH, PSFC-MIT, C-MOD TEAM — Alcator C-Mod is performing ITER-like experiments to benchmark projections to 15 MA ELMy H-mode Inductive ITER discharges. The main focus has been on the transient ramp phases. For most of the experiments presented, the plasma current in C-Mod is 1.3 MA, toroidal field is 5.4 T, aspect ratio is 3.0, and the plasma elongation is 1.75-1.85. The rampup experiments have current rampup times of 500 to 650 ms, which are equivalent to a 100 s rampup in ITER, based on the scaling of $\Delta t_{ramp}/\langle T_e \rangle^{3/2} a^2$. Ohmic and ion cyclotron (ICRF) heated discharges are examined. The rampdown phase examined in experiments on C-Mod have durations of 350, 600, and 750 ms, equivalent to ITER rampdown times of 70, 120, and 180 s, respectively. Both ELM-free and EDA H-modes have been sustained in the rampdowns. Simulations of the C-Mod discharges have used the Tokamak Simulation Code, augmented with ICRF source deposition from TRANSP. The Coppi-Tang energy transport model is used to provide the best fit to the experimental electron temperature profile. The Bohm/gyro-Bohm and the CDBM energy transport models are also being examined for C-Mod ITER-like discharges. Supported by DE-AC02-09CH11466, DE-FC02-99ER54512.

C. Kessel
PPPL

Date submitted: 13 Jul 2010

Electronic form version 1.4