

Abstract Submitted
for the DPP07 Meeting of
The American Physical Society

Simulations and Experiments on Modifying the q-profile for Advanced Tokamak Discharges on Alcator C-Mod¹ C. KESSEL, S. SCOTT, R. WILSON, PPPL, A. HUBBARD, P. BONOLI, J-S. KO, Y. LIN, R. PARKER, A. SCHMIDT, D. TERRY, G. WALLACE, S. WOLFE, S. WUKITCH, MIT PSFC — As part of the advanced tokamak scenario development on Alcator C-Mod, time-dependent simulations using the Tokamak Simulation Code (TSC) and experiments are examining the impact of ion cyclotron radio frequency (ICRF) heating and Lower Hybrid (LH) heating and current drive on plasma evolution. Here the ICRF heating is obtained by using the hydrogen minority scheme at 80 MHz with BT of 5.4 T. The LH utilizes 4.6 GHz and a phasing of 90 degrees co-CD. Slower plasma current ramps, earlier diverting with heating, H-mode transition, and either ICRF or LH heating, as well as both together, are examined. The sawtooth onset, li, surface voltage, motional stark effect (MSE), and profile data are being used to categorize the impact and constrain the simulations where possible. Experiments have shown that LH powers less than 1/4 of the injected ICRF power can significantly delay the sawtooth onset when injected during rampup. While on the other hand, the ICRF power is found to be critical for accessing the H-mode.

¹Supported by US DOE Contract No. DE-AC02-76CH03073 and DE-FC02-99ER54512.

C. Kessel
Princeton Plasma Physics Laboratory

Date submitted: 19 Jul 2007

Electronic form version 1.4