Abstract Submitted
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Simulations of ITER-like Discharges on Alcator C-Mod C.E. KESSEL, PPPL, S.M. WOLFE, PSFC MIT, A.C.C. SIPS, EURATOM/UKAEA , I.H. HUTCHINSON, PSFC MIT — Discharges in Alcator C-Mod are being used to examine the plasma evolution under ITER-like conditions in order to benchmark calculations for ITER. These include equivalent current diffusion timescales, q95, betaN, lower single null and ITER shape, at ITER's toroidal field of 5.4 T, and with ICRF heating. Rampup experiments with both ohmic and with ICRF heating were performed. Simulations, with the time-dependent free-boundary plasma evolution code TSC, of these discharges showed that predictions of the Coppi-Tang L-mode energy transport gave rise to too low a temperature near the plasma edge, which consequently caused the current profile to be too peaked. The model, based on profile consistency, was adjusted to broaden the electron temperature profile producing much better agreement with the temperature profile, sawtooth onset, and li. Simulations with GLF23, which has only a boundary condition, showed some difficulties in the L-mode phase. ICRF and LH in the rampup phase of C-Mod was examined with simulations showing that volt-second savings were resistive, similar to the result from ITER simulations. In rampdown experiments, the transition from H-mode to L-mode and the ramp rate were controlled but demonstrated some complex H-L-H behavior with ICRF power reductions. Supported by DE-AC02-09CH11466, DE-FC02-99ER54512.

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