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**Effects of LHCD on H-mode transition, pedestal and confinement on Alcator C-Mod**[1] A.E. HUBBARD, P.T. BONOLI, C.L. FIORE, J.W. HUGHES, L. LIN, Y. LIN, R. PARKER, M. PORKOLAB, A.E. SCHMIDT, G. WALLACE, S. WOLFE, S. WUKITCH, MIT PSFC, A.C.C. SIPS, IPP-Garching, Euratom Assoc., Germany, C. KESSEL, J.R. WILSON, PPPL — Advanced scenario experiments on Alcator C-Mod seek to combine current profile control using lower hybrid current drive (LHCD) with the high confinement of H-mode plasmas. There is little prior experience with LHCD in H-modes at the high field (5.4 T) and density ($>10^{20}$ $m^{-3}$) typical of C-Mod, and ITER. We find good LH coupling in H-modes, though relatively low driven current is expected at the LH power available to date (up to 1.2 MW). An unexpected result was a reduction in density and increase in $T_{ped}$ in some LHCD experiments, indicative of an increase in edge particle transport. In other experiments aimed at exploring the "hybrid" scenario, LHCD was used to modify j(r) before H-modes, delaying sawteeth until well into the current flat top. The timing of ICRF and H-modes with respect to $q_0$=1 affected both L-H transition dynamics and the H-mode pedestal and confinement, producing transiently higher stored energy than in discharges without LHCD.

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