

Abstract Submitted
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Studies of enhanced energy confinement discharges with L-mode-like edge particle transport in Alcator C-Mod¹ E. MARMAR, B. LIPSCHULTZ, A. DOMINGUEZ, M. GREENWALD, N. HOWARD, A. HUBBARD, J. HUGHES, B. LABOMBARD, R. MCDERMOTT, M. REINKE, D. WHYTE, MIT, C. KESSEL, PPPL — A regime of enhanced energy confinement on Alcator C-Mod exhibits an H-mode-like temperature pedestal, but with edge particle transport and density profiles like those in L-mode. Access to this “improved L-mode” is achieved by operating just below the H-mode power threshold, with ion drift in the unfavorable direction, away from the x-point. Increases of power, up to a factor of three above that required for entry to H-mode with favorable drift, yield global confinement comparable to H-mode (H-ITER-98~1.0), but with no density or impurity accumulation, and no need for ELMs to regulate the edge. Edge fluctuations seen with magnetics typically cover the range from 80 kHz to 150 kHz, somewhat broader than the quasi-coherent mode responsible for edge particle transport in EDA H-mode. The resulting high temperature, low density edge pedestal has low collisionality, and modeling indicates this could be an attractive target for Lower Hybrid Current Drive in advanced scenarios.

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