Abstract Submitted
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**Access to high-confinement regimes on Alcator C-Mod and the complex influence of divertor geometry**[1] J.W. HUGHES, B. LABOMBARD, D. BRUNNER, A. HUBBARD, J. TERRY, J. RICE, J. WALK, MIT PSFC, I. CZIEGLER, UCSD, E. EDLUND, PPPL, C. THEILER, CRPP — Placement of X-points and strike points in a diverted tokamak can have a remarkable impact on plasma properties, including thermal and particle confinement. The distinctive divertor of Alcator C-Mod allows substantial variation of divertor leg length, field line attack angle and divertor baffling, allowing us to induce changes in both L-mode confinement and access to both H-mode and I-mode. With the ion $\nabla B$ drift directed toward the divertor, scanning the strike point can induce $\sim 2\times$ reductions in H-mode power threshold, and can produce a window for I-mode operation with $H_{98} > 1$. Detailed high-resolution measurements, spanning the last closed flux surface, provide profiles of key quantities ($n$,$T$,$\phi$) and their gradients, which are of likely importance in determining whether a discharge evolves an edge transport barrier, or remains in an L-mode state. Advances in Langmuir probes have enabled characterization of both radial profiles and fast ($<$ 1MHz) fluctuations in L-mode as the L-H threshold power is approached. These data allow new tests of models for H-mode access, especially those attempting to explain the non-monotonic density dependence of the H-mode power threshold through changes in transport and/or turbulence.

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