Abstract Submitted
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Pedestal and confinement properties under shape and magnetic topology variation on Alcator C-Mod[1] J.W. HUGHES, B. LIPSCHULTZ, D. WHYTE, E.S. MARMAR, M. GREENWALD, A.E. HUBBARD, R.M. MCDERMOTT, MIT PSFC — Recent work on Alcator C-Mod has examined the influence of magnetic topology and equilibrium shape on edge pedestal structure and plasma confinement. H-mode pedestal parameters show a striking sensitivity to the ion ∇B drift direction, relative to the active x-point position, with considerable variability observed when the distance between separatrices is on the order of the pedestal width ($\sim$5mm) or less, *i.e.* very near double null (DN). Near DN H-modes can have improved confinement factors ($H_{98} > 1$) as a result of elevated pedestal temperature ($T_{\rm ped}$), with the edge regulated by benign small edge-localized modes (ELMs) or continuous modes. Such operational regimes with no large ELMs are desirable for ITER and other future devices. Discharges with L-mode-like particle confinement, yet with $H_{98} \approx 1$ and $T_{\rm ped} \approx 1$keV, were maintained steady-state by operating with high current, strong shaping and unfavorable ∇B drift direction, while holding input power below the L-H threshold to prevent particle barrier formation. The pedestal and confinement properties of these improved ELM-free regimes will be compared to those of typical H-modes.

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