

Abstract Submitted
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Empirical scaling of ELMy H-mode pedestals on Alcator C-Mod and comparisons with the EPED model¹ J.R. WALK, J.W. HUGHES, A.E. HUBBARD, J. TERRY, MIT Plasma Science and Fusion Center, P.B. SNYDER, General Atomics — H-mode discharges on the Alcator C-Mod tokamak featuring edge-localized modes (ELMs) are used to find empirical scalings of the plasma pedestal with bulk plasma and engineering parameters. Pedestals in ELMy discharges typically reach densities of 5×10^{19} – $2.5 \times 10^{20} \text{ m}^{-3}$ and temperatures of 400–1000 eV (corresponding to 20–50 kPa in the pressure pedestal), over a width of 3–5% of poloidal flux. We present the results of a wide range of C-Mod ELMy H-mode discharges, including plasma current scans over 700kA–1MA, as well as shaping variation both in elongation (1.45–1.6) and upper/lower triangularity (0.15–0.3 and 0.7–0.8), in continuation of previous ELMy pedestal studies on C-Mod. Observed pedestal scalings are compared with the results of the most recent iteration of the EPED class of models, which uniquely predict the pedestal width and height for a set of scalar input parameters by a combination of stability calculations for coupled edge kink/peeling and ballooning MHD modes, and the localized kinetic analogue to the MHD ballooning mode.

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