

Abstract Submitted
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Exploring physics-based models for a multi-machine L-H power threshold database¹ AUDREY SALTZMAN, JERRY W. HUGHES, ABHILASH MATHEWS, Massachusetts Institute of Technology, Plasma Science and Fusion Center — The threshold power required to access H-mode is modeled using statistical techniques informed by past experimental results. Using the international multi-machine H-mode threshold power database (Martin et al., 2008), an empirical expression for the density at the minimum threshold power is determined and compared with a predictive expression from Ryter et al. (2014). This minimum is then used to separate the high- and low- density branches in a piecewise expression for the threshold power in terms of density, magnetic field, and plasma surface area. A single-machine database from Alcator C-Mod, with substantially more data points, has been assembled, allowing investigation of the effects of additional parameters, such as those defining divertor configuration and plasma shape. Updated values for the expected threshold power and density associated with its minimization are presented for SPARC.

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