

Abstract Submitted
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H-Mode Pedestal Width and Neutral Penetration P.H. DIAMOND,
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92093-0424 USA — ITER confinement depends sensitively upon the *width* of the
H-mode pedestal, the physics of which remains poorly understood. Here we report
on analytical studies of a simple model of the L→H bifurcation in heat and particle
transport, with central heating and edge fueling. A simple change-of-variables en-
ables the reduction of this coupled system to simpler one field systems, *without* any
ad-hoc assumptions concerning the transport coefficients in L and H mode. Results
indicate that a transition occurs locally if the product of heating and fueling lies
within an interval set by the transport parameters. Thus, the pedestal width is
inexorably linked to the neutral penetration depth, and an exponentially increasing
amount of power is required to push beyond it. The major unknown is the particle
diffusivity in H-mode. Implications for ITER, where neutral opacity is thought to
be high, will be discussed.

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