

Abstract Submitted
for the DPP99 Meeting of
The American Physical Society

Sorting Category: 5.1.1.2 (Experimental)

A Model for the Energy Confinement Scaling of H-mode Plasmas in Tokamaks¹ C.L. HSIEH, B.D. BRAY, J.C. DE-BOO, T.H. OSBORNE, General Atomics — ITER96L and ITER98Hy are two examples of deducing from experimental data the scaling of energy confinement time for the L-mode and H-mode plasmas. Even though they represent different plasma operation regimes, the scaling laws show similar characteristics. These may be taken to imply strong connections between the heat transport of H and L regimes. For instance, the regimes may share the same thermal diffusivity in the plasma interior. A model is being developed based on the idea that an H-mode plasma is simply a much larger L-mode plasma with its boundary truncated in order to fit the machine physical size. In other words, an H-mode plasma is an L-mode with some unusual boundary conditions, and its confinement scaling ought to be the L-mode scaling modified by the effects from the new boundary conditions. The model estimates the boundary conditions, taking hints from the differences between ITER96L and ITER98Hy. As a result of these trials, the model creates a number of H-mode confinement scaling expressions in functional forms different from that of ITER98Hy.

¹Supported by U.S. DOE Contract DE-AC03-99ER54463.

Prefer Oral Session
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Special instructions: DIII-D Poster Session 1, immediately following ME Austin

Date printed: July 16, 1999

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