Abstract Submitted
for the DPP96 Meeting of
The American Physical Society

Sorting Category: 5.1.1.2 (Experimental)

Parameters Affecting the H–L Transition on DIII–D,[1]
D.M. THOMAS, T.N. CARLSTROM, R.J. GROEBNER, A.W. LEONARD, General Atomics, T.L. RHODES, C.L. RETTIG, University of California, Los Angeles — The "back" transition from H–mode to L–mode has been studied on DIII–D as part of our investigation of the L-H transition power threshold scaling. Based on present density-dependent scalings for the H–mode power threshold, ITER will require substantial hysteresis in this parameter to remain in H–mode as n_e rises. Defining the hysteresis in terms of the ratio of sustaining to threshold power, P_{HL}/P_{LH} may need to be as small as 50% for ITER. Our initial goal is to identify any scaling of the power necessary to sustain the H–mode as n_e is varied and to assess the amount of power hysteresis obtained on DIII–D. Careful analysis of the power flow through the edge (believed to be the relevant control parameter) is done using bolometric reconstruction of the radiated component. As heating power is decreased in H–mode and the power flow drops, edge T_e drops and the back transition occurs with T_e close to its L–H transition value while edge n_e changes little and then drops rapidly after the time of the back transition. Results to date imply substantial (30%-60%) hysteresis is achieved under the conditions studied on DIII–D.

[1]Work supported by U.S. DOE Contract No. DE-AC03-89ER51114 and Grant No. DE-FG03-86ER53266.

Dan M. Thomas
thomas@gav.gat.com
General Atomics

☐ Prefer Oral Session
☒ Prefer Poster Session

Special instructions: P-1-23

Date submitted: August 1, 1996 Electronic form version 1.1