Abstract Submitted
for the DPP07 Meeting of
The American Physical Society

Dependence of the L-H power threshold on magnetic balance and heating method in NSTX[1] R. MAINGI, T. BIEWER, Oak Ridge National Lab, H. MEYER, UKAEA Fusion-Culham, R. BELL, B. LEBLANC, Princeton Plasma Physics Lab, C.S. CHANG, New York University, NSTX TEAM — H-mode access is a critical issue for next step devices, such as the International Thermonuclear Experimental Reactor (ITER), which is projected to have a modest heating power margin over the projected L-H power threshold (PLH). The importance of a second X-point in setting the value of PLH has been clarified in recent experiments on several tokamaks. Specifically a reduction of PLH was observed when the magnetic configuration was changed from single null (SN) to double null (DN) in the MAST, NSTX, and ASDEX-Upgrade devices [1]. Motivated by these results, detailed PLH studies on NSTX have compared discharges with neutral beam and rf heating, as a function of drsep. Similar PLH values and edge parameters are observed with the two heating methods in the same magnetic configuration, with PLH $\sim$ 0.6 MW lowest in DN and increasing to $\sim$ 1.1 MW and 2-4 MW in lower-SN and upper-SN configurations respectively (ion grad-B-drift towards lower X-point). The evolution of the experimental profiles of parameters in L-mode before the L/H transition will be compared with simulations using the XGC code (C.S. Chang).
[1] MEYER, H. et al., Nucl. Fusion 46 (2006) 64.

[1]Sponsored by US DOE in part by contract #DE-AC05-00OR22725.

Rajesh Maingi
Oak Ridge National Lab

Date submitted: 12 Jul 2007 Electronic form version 1.4