

**Abstract Submitted for the 55th Annual Meeting
Division of Plasma Physics
November 11-15, 2013
Denver, Colorado**

Category Number and Subject:

[] Theory [] Experiment

Pedestal Structure in DIII-D Steady-State Discharges,*

A.C. Sontag, S.J. Diem, M. Murakami, J.M. Park, *ORNL*; J.R. Ferron, T.H. Osborne, *GA*; C.T. Holcomb, *LLNL* – A range of DIII-D steady-state discharges have been analyzed to determine the pedestal structure and bootstrap current as a function of several global parameters including q_{\min} , q_{95} and β_N . The pedestal structures are compared with EPED predictions. Variations in turbulence, ExB shearing rate, j_{BS} and MHD stability are examined. DIII-D is developing candidate high- β_N steady-state operational scenarios, including high- q_{\min} and high- l_i , through current and pressure profile optimization. Pedestal structure and how it affects the current profile is important for any sustained high performance scenario. High- q_{\min} scenarios require a relatively large pedestal height with significant bootstrap current, while high- l_i scenarios require a smaller pedestal and reduced bootstrap current. Understanding how the pedestal structure is affected by the other requirements of operating in these scenarios is needed for this optimization.

*Work supported by the US Department of Energy under DE-AC05-00OR22725, DE-FC02-04ER54698, and DE-AC52-07NA27344.