

Abstract Submitted  
for the DPP99 Meeting of  
The American Physical Society

Sorting Category: 5.1.1.2 (Experimental)

**Transitions to Improved Core Transport in DIII-D L-mode NCS Discharges**<sup>1</sup> M.E. AUSTIN, K.W. GENTLE, University of Texas, K.H. BURRELL, C.C. PETTY, General Atomics, C.L. RETTIG, University of California, Los Angeles — Spontaneous increases in core electron and ion temperature and ion rotation velocity have been observed in DIII-D L-mode discharges with low density and early neutral beam injection. A reduction in turbulent fluctuation level is usually seen coincident with the changes. Many times these improvements in core confinement correlate with a low order rational  $q$  value coming into the plasma, but at other times they do not. We explore the possibility of a threshold for this transition by comparing integer  $q$  and non-integer  $q$  cases. We also investigate in this class of discharges the case with  $q_{\min}$  near 1, just before the onset of sawteeth. These discharges exhibit a state that lacks a well-defined layer of reduced thermal diffusivity as seen in higher  $q$  transitions but instead exhibits a broad overall improvement in confinement.

<sup>1</sup>Supported by U.S. DOE Grants DE-FG03-97ER54415 and DE-FG03-86ER53266 and Contract DE-AC03-99ER54463.

Prefer Oral Session  
 Prefer Poster Session

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Special instructions: DIII-D Poster Session 1, immediately following PA Politzer

Date printed: July 20, 1999

Electronic form version 1.4