

Abstract Submitted  
for the DPP11 Meeting of  
The American Physical Society

**High  $q_{min}$  Steady State Scenario Development Using Off-axis Neutral Beam Injection on DIII-D**<sup>1</sup> C.T. HOLCOMB, M.J. LANCTOT, LLNL, J.R. FERRON, T.C. LUCE, P.A. POLITZER, A.D. TURNBULL, R.J. LA HAYE, GA, F. TURCO, J.M. HANSON, Columbia U., J.M. PARK, M. MURAKAMI, ORNL, Y. IN, FAR-TECH, Inc., M. OKABAYASHI, PPPL — Initial high power DIII-D experiments using off-axis neutral beam injection have produced plasmas with broader pressure and current density profiles and higher core safety factor than in similar plasmas employing only on-axis NBI. Such changes are expected to increase the ideal  $\beta_N$  stability limits, avoid 3/2 and 2/1 tearing modes when  $q_{min} > 2$ , thus enabling access to a high  $\beta_N$ , high bootstrap fraction steady state scenario. The maximum achieved  $\beta_N$  in  $q_{min} > 2$  plasmas using off-axis neutral beam injection and the calculated resistive and ideal stability limits will be shown, as well as the transport properties and noninductive current drive fraction. Predictive modeling of the equilibrium profiles, stability and noninductive current will assess the need for additional auxiliary current drive power and flexibility.

<sup>1</sup>Supported by the US DOE under DE-AC52-07NA27344, DE-FC02-04ER54698, DE-FG02-04ER54761, DE-AC05-00OR22725, DE-FG02-06ER84442, and DE-AC02-09CH11466

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Date submitted: 01 Sep 2011

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