

**Abstract Submitted for the Forty-Seventh Annual  
Meeting  
Division of Plasma Physics  
October 24–28, 2005, Denver, Colorado**

Category Number and Subject:

Theory       Experiment

**Overview of Recent DIII-D Experimental Results,\*** M.R. Wade, DIII-D National Team, GA – The mission of the DIII-D program is establish the scientific basis for the optimization of the tokamak approach to fusion energy production. DIII-D's near-term goals are: 1) to ensure ITER success by providing scientific solutions to key issues; 2) to enhance the ITER physics program through development and characterization of advanced operating modes; and 3) to develop the scientific basis for high  $\beta$ , steady-state operation. Experiments have demonstrated ELM suppression at ITER-relevant collisionalities using an  $n=3$  resonant magnetic perturbation, avoidance of NTMs via localized ECCD in plasmas operating at the no-wall stability limit, and re-deposition of carbon near the inner divertor leg. DIII-D continues to lead the world effort in characterizing hybrid and advanced inductive operating scenarios for ITER through studies that have expanded the operating space and assessing details of energy and current transport. Advanced Tokamak experiments have demonstrated fully non-inductive operation with an aligned current profile, sustained operation with  $\beta$  50% above the no-wall stability limit, and real-time current profile control.

\*Work supported by U.S. DOE under DE-FC02-04ER54698.

Oral       Poster