Abstract Submitted for the Forty-Sixth Annual Meeting
Division of Plasma Physics
November 15–19, Savannah, Georgia

Category Number and Subject: 5.6.2 DIII-D Tokamak

[ ] Theory [x] Experiment

Please place this poster next to Holger St. John's in the DIII-D Session

Progress in the Integration of Physics-Based MHD Stability Models into the ONETWO Transport Code,* D. Zhou, *ASIPP*, H.E. St John, L.L. Lao, M.S. Chu, P.B. Snyder, *General Atomics*, D.P. Brennan, *ORISE* – Self-consistent integration of MHD stability models in transport analysis is essential for simulation and development of AT scenarios for DIII-D and ITER. High accuracy equilibrium calculations are required for stability studies. To facilitate the coupling of the stability results with transport calculations, the TOQ inverse Grad-Shafranov equilibrium solver has been integrated into ONETWO. The running results of a sample simulation using TOQ and other equilibrium solvers inside ONETWO are generally in agreement. To model the effects of resonant magnetic drag due to error magnetic field on the plasma rotation, a simple inductive motor model has been implemented into ONETWO. Simulation of a DIII-D RWM discharge indicates that the observed plasma slowing down cannot be fully explained by the resonant magnetic damping due to the error magnetic field alone. Non-resonant magnetic damping likely plays a role. Other planned developments include integration of ONETWO with the ELITE edge peeling- ballooning stability code to study ELM dynamics. Details of the development and recent results will be presented.

*Supported by U.S. DOE under DE-FC02-04ER54698, DE-FG03-95ER54309, and DE-AC05-76OR00033.