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Simulation of ITER Control Scenarios with Corsica Plasma Models[1] W.H. MEYER, LLNL, T.A. CASPER, L.D. PEARLSTEIN — We are developing capabilities for using the Corsica equilibrium and transport code as the nonlinear plasma model, and synthetic diagnostic set, to explore ITER state-space controller techniques. The state-space controllers are implemented in the Mathworks Matlab/Simulink environment. Corsica is coupled to Simulink via remote procedure call (rpc) allowing Simulink to access the Corsica internal database. The Simulink state-space controllers use the rpc interface to communicate active control coil currents to Corsica which calculates and updates the equilibria and transport for free-boundary plasma evolution. When a time step is complete, Simulink retrieves the feedback gap, current, and flux data through the same rpc access. The rpc interface allows the Corsica plasma simulations to be run on a remote high performance Linux cluster while the Simulink graphical interface is run on the local desktop. We will report on the progress in simulating vertical stabilization , and current and shape control experiments.

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