

Abstract Submitted for the 55th Annual Meeting
Division of Plasma Physics
November 11-15, 2013, Denver, CO

Category Number and Subject: ITER

Theory Experiment

The ITER Plasma Control System Simulation Platform,*

D.A. Humphreys, M.L. Walker, A.S. Welander, *GA*; G. Ambrosino, G. de Tommasi, M. Mattei, *CREATE*; G. Neu, C. Rapson, G. Raupp, W. Treutterer, *IPP-Garching*; A. Winter, *ITER IO* — Design of the ITER plasma control system (PCS) will require extensive simulation to evaluate both candidate architecture and algorithms. The ITER Plasma Control System Simulation Platform (PCSSP) is a specialized simulation environment currently under development to satisfy the demanding requirements of this design process. The PCSSP supports control-level models of systems relevant to ITER plasma control, including key plasma responses, and provides very high flexibility in selection of these models for a given simulation purpose. This flexibility enables higher fidelity models to be used to focus on particular control loops, for example. The PCSSP also supports modeling and simulation of exceptions (off-normal and fault events), as well as PCS algorithms and policies for handling these exceptions. We describe the present implementation and status of PCSSP, including modules simulating axisymmetric MHD, basic kinetics, and tearing mode physics, along with corresponding controller and exception handling modules.

*Supported by ITER/CT/6000000037.