Abstract Submitted
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Experimental and Model Validation of ITER Operational Scenarios[1] T.A. CASPER, W.H. MEYER, Lawrence Livermore National Laboratory, D.A. HUMPHREYS, A.W. HYATT, G.L. JACKSON, T.C. LUCE, General Atomics — Modified startup scenarios demonstrated in DIII-D contributed to new ITER startup scenarios with a full-sized plasma and X-point formation early in time. Higher internal inductance in the original experiments led to modifications of the current ramp and the development of feedback control methods. While experimental validation in DIII-D provides a necessary demonstration of ITER operational modes, evaluation of the extrapolation to ITER requires a modeling approach. Our emphasis is on validating models used in ITER simulations by comparison to DIII-D experimental data. Meaningful startup predictions require an accurate model of electron thermal transport since the electron temperature is critical to the current profile evolution that affects the response of the control system. Using results of this model validation, free-boundary predictive simulations have explored the ITER operational issues of flux consumption, stability and performance of the ITER poloidal-field coils and controller during the current rise and into the burn phase.

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