Abstract Submitted
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Predictions of ITER Steady State Scenario Using Scaled Experimental Edge Profiles in DIII-D[1] M. MURAKAMI, J.M. PARK, ORNL, J.E. KINSEY, L.L. LAO, T.C. LUCE, T.H. OSBORNE, G.M. STAEBLER, H.E. ST. JOHN, P.B. SNYDER, General Atomics, E.J. DOYLE, R.V. BUDNY, D. MCCUNE, PPPL — The DIII-D ITER demonstration shots replicated leading features of the ITER steady state scenario, including noninductive fraction (f_{NI}) above 100%, $q_{95} \sim 5$, plasma shape, aspect ratio and I_p/aB. Integrated modeling with a theory-based (GLF23) model is used to extrapolate these results to the ITER steady state scenarios. The boundary conditions for GLF23 are set at $\rho = 0.8$ while the edge profiles at $0.8 < \rho < 1.0$ are scaled with the experimental local $\beta_N(\rho)$. The predicted values of f_{NI} and fusion gain (Q) using the ITER Day-1 heating and current drive capability are close, but still somewhat short (by ∼10%) in achieving the $f_{NI} = 100\%$ and $Q = 5$ goal. Sensitivities of f_{NI}, Q, edge and core stability, and gyrokinetic stability to plasma current, density, and density peaking, etc. will be discussed. Possible heating and current drive upgrades will also be explored.

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