Abstract Submitted
for the DPP19 Meeting of
The American Physical Society

Predicting and Optimizing the Pedestal in Present and Future Tokamaks[1] PHILIP SNYDER, General Atomics, JERRY HUGHES, MIT PSFC, MATTHIAS KNOLKER, Oak Ridge Associated Universities, JOSEPH MCCLENAGHAN, ORSO MENEGHINI, TOM OSBORNE, General Atomics, SAMULI SAARELMA, Culham Centre for Fusion Energy, HOWARD WILSON, University of York and Culham Centre for Fusion Energy — The pressure and temperature at the top of the pedestal play a key role in fusion performance of tokamaks. We review comparisons of pedestal predictions with the EPED model to observations on several tokamaks, focusing on high pedestal regimes such as Super H Mode. The role of both plasma shaping and aspect ratio is studied in detail, noting that even small changes to aspect ratio and shape can have profound implications for access to high pedestal states. Updates to the EPED model are discussed, addressing generalizations of the model and numerical and formulational challenges specific to lower aspect ratio devices. Predictions for DIII-D, JET, and MAST-U are discussed, as well as pedestal optimization for next step devices such as a Sustained High Power Density device and Compact Pilot Plant.

[1]Work supported by US DOE under DE-FG02-95ER54309, DE-FC02-04ER54698, DE-FC02-06ER54873, DE-SC0018990, DE-SC0014264.

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Date submitted: 10 Jul 2019 Electronic form version 1.4