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[ ] Theory [x] Experiment

The NTCC: How a Collaborative Effort Advanced the Analysis Capabilities at DIII-D,* H.E. St John, L.L. Lao, *General Atomics,* M.~Murakami, *Oak Ridge National Laboratory,* D. Zhou, *Insititute of Plasma Physics, Chinese Academy Of Sciences* – The experimental and theoretical fusion research at General Atomics has benefited significantly and will continue to benefit from the ready availability of well-benchmarked, efficient, and extensively validated computational codes required for toroidal fusion confinement. This was made possible through the DOE sponsored national effort that is known as the National Transport Code Collaboratory. By judicious implementation of key NTCC modules, we are able to perform more refined modeling and analysis than would otherwise be possible. In this presentation, we review applications of the NTCC modules implemented so far in our local transport code, ONETWO. Particular emphasis is placed on noninductive ITER and DIII-D AT scenario developments, largely made possible by the availability of NTCC modules. Motivated by DIII-D experimental and theoretical analyses, we show that in a steady-state configuration 100% noninductive current drive is possible using current ITER design parameters that consist of 33~MW of 1 MeV off-axis neutral beam injection, 20 MW of lower hybrid and 20 MW of electron cyclotron heating and current drive.

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