Abstract Submitted
for the DPP11 Meeting of
The American Physical Society

Physics Modeling of ARIES-AT[1] H.E. ST. JOHN, A.D. TURNBULL, M. CHOI, S.P. SMITH, R.J. BUTTERY, L.L. LAO, P.B. SNYDER, General Atomics — We describe the theoretical modeling of predicted steady state ARIES advanced tokamak discharges from the perspective of MHD, energy transport, rf current drive, and core/edge stability simulations. The modeling requires the interaction of codes from each of these categories and a significant challenge has been the creation of a framework that minimizes the expert knowledge and tedium involved in performing the necessary calculations. Our solution to this problem was the creation of a state file driven integrated modeling framework, IMFIT, that contains, in part, the required expert system and generates the necessary state, file driven interfaces. The general techniques developed are applied to indicate what the performance limits of steady state ARIES discharges are expected to be with turbulent transport, lower hybrid current drive, and edge pedestal stability limits enforced.

[1]Work supported by US DOE under DE-FC02-04ER54698 and DE-FG02-95ER54309.

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Date submitted: 29 Jul 2011 Electronic form version 1.4