Abstract Submitted
for the DPP20 Meeting of
The American Physical Society

Introducing the Wisconsin HTS Axisymmetric Mirror[1] JAY ANDERSON, M CLARK, C. FOREST, B. GEIGER, V. MIRNOV, S. OLIVA, J. PIZZO, O. SCHMITZ, J. WALLACE, University of Wisconsin - Madison, G. KRISTOFEK , R. MUMGAARD, Commonwealth Fusion Systems, E. PETERSON, A. RAM, D. WHYTE, J.‘ WRIGHT, S. WUKITCH, MIT, D. GREEN, ORNL, R. HARVEY, YU. V. PETROV, CompX, B. SRINIVISAN, Va Tech, A. HAKIM, PPPL
— Currently in early stage of construction, the Wisconsin HTS Axisymmetric Mirror (WHAM) is motivated by major advances in both technology (high temperature superconductivity) and physics (axisymmetric MHD stability with keV-level electrons). A pair of 17 T mirror coils (from CFS) generates an accessible 4 T contour in the plasma for breakdown and heating with a 110 GHz gyrotron (retired from DIII-D). Endcell biasing shears the rotation profile to impose MHD stability. 25 kV NBI sources a nonthermal ion population; device confinement τ_{ii} improves rapidly with average ion energy as an ambipolar potential and carefully maintained expander confine electron heat. Early reactor studies rely on MeV-level NBI, we instead pursue a breakthrough approach in which the low energy NBI seed ions are accelerated in situ by HHFW. Numerical support leverages vast expertise from several domestic institutions.

[1]Work supported by USDoE ARPA-E and OFES, and Commonwealth Fusion Systems.

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Date submitted: 29 Jun 2020 Electronic form version 1.4