

Initial considerations of a large-area, high plasma heat flux plasma material interface R&D capabilities.

PMIF working group (Larry Baylor, John Canik, John Caughman, Stephanie Diem, Rick Goulding, Don Hillis, Predrag Krstic, Fred Meyer, and Martin Peng)

Researchers at ORNL have recently started to examine the merits and requirements of using a large cross section Helicon (~15 cm diameter) plus subsequent RF heating of the ions and electrons for application to Plasma Material Interface R&D in a linear configuration. The capabilities of this R&D approach are currently being discussed with the U.S. fusion Research Needs Workshop (ReNeW) participants. Separately, a design concept to enable this R&D is being developed while a Helicon prototype testing project is being initiated, both under some internal development funds. This PMIF will aim to be a linear research users facility to help close the R&D gaps regarding Plasma-Wall Interaction, Plasma Facing Component, and other internal components including the RF systems, recently identified in a FESAC report on such research opportunities. These ideas are presented at FOM to solicit advice from experts associated with the MAGNUM-PSI Program and its collaborators, and to identify opportunities of collaboration in the development of this PMIF Program for the U.S. fusion community.