

Abstract Submitted
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Examining Innovative Divertor and Main Chamber Options for a National Divertor Test Tokamak¹ B. LABOMBARD, MIT PSFC, M. UMAN-SKY, LLNL, D. BRUNNER, A.Q. KUANG, E. MARMAR, G. WALLACE, D. WHYTE, S. WUKITCH, MIT PSFC — The US fusion community has identified a compelling need for a National Divertor Test Tokamak. The 2015 Community Planning Workshop on PMI called for a national working group to develop options. Important elements of a NDTT, adopted from the ADX [1] concept, include the ability to explore long-leg divertor ‘solutions for power exhaust and particle control’ (Priority Research Direction B) and to employ inside-launch RF actuators combined with double-null topologies as ‘plasma solution for main chamber wall components, including tools for controllable sustained operation’ (PRD-C). Here we examine new information on these ideas. The projected performance of super-X and X-point target long-leg divertors is looking very promising [2]; a stable fully-detached divertor condition handling an order-of-magnitude increase in power handling over conventional divertors may be possible. New experiments on Alcator C-Mod are addressing issues of high-field side versus low-field side heat flux sharing in double-null topologies and the screening of impurities that might originate from RF actuators placed in the high-field side – both with favorable results. [1] Nuclear Fusion 55 (2015) 053020. [2] M. Umansky invited talk, this conference.

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