

Abstract Submitted  
for the DPP15 Meeting of  
The American Physical Society

**ADX – Advanced Divertor and RF Tokamak Experiment** MARTIN GREENWALD, BRIAN LABOMBARD, PAUL BONOLI, JIM IRBY, JIM TERRY, GREG WALLACE, RUI VIEIRA, DENNIS WHYTE, STEVE WOLFE, STEVE WUKITCH, EARL MARMAR, MIT-PSFC — The Advanced Divertor and RF Tokamak Experiment (ADX) is a design concept for a compact high-field tokamak that would address boundary plasma and plasma-material interaction physics challenges whose solution is critical for the viability of magnetic fusion energy. This device would have two crucial missions. First, it would serve as a Divertor Test Tokamak, developing divertor geometries, materials and operational scenarios that could meet the stringent requirements imposed in a fusion power plant. By operating at high field, ADX would address this problem at a level of power loading and other plasma conditions that are essentially identical to those expected in a future reactor. Secondly, ADX would investigate the physics and engineering of high-field-side launch of RF waves for current drive and heating. Efficient current drive is an essential element for achieving steady-state in a practical, power producing fusion device and high-field launch offers the prospect of higher efficiency, better control of the current profile and survivability of the launching structures. ADX would carry out this research in integrated scenarios that simultaneously demonstrate the required boundary regimes consistent with efficient current drive and core performance.

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Date submitted: 23 Jul 2015

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