

**Abstract Submitted for the 53rd Annual Meeting
Division of Plasma Physics
November 14–18, 2011, Salt Lake City, Utah**

Category Number and Subject:

☐ Theory ☒ Experiment

An Isolated Divertor for Reactor Scale Tokamaks,* A.W. Leonard, M.A. Mahdavi, T.W. Petrie, *General Atomics* – A divertor configuration is proposed to address the requirements of a reactor scale tokamak. A reactor divertor must dissipate heat flux over a wide area and reduce erosion to a tolerable level for component lifetime, while simultaneously allowing for a high performance core plasma at a density compatible with efficient current drive. A configuration with the divertor strike point at large major radius, similar to a “Super-X” geometry reduces q_{\parallel} with magnetic flux expansion from the X-point to the divertor target. This may allow for containment of a cold dense detached plasma in the divertor region while maintaining a high pressure pedestal. Divertor baffling may also be designed for enhanced containment of the radiating divertor plasma. This configuration has the potential to provide heat flux control at a lower core density compared to a standard configuration. Initial experiments on DIII-D exploring this concept will be described. Concepts of how this approach may be pursued in DIII-D will also be presented.

*Work supported by US DOE under DE-FC02-04ER54698.