Abstract Submitted for the 51st Annual Meeting
Division of Plasma Physics
November 2–6, 2009, Atlanta, Georgia

Multi-Parameter Scaling of Divertor Heat Flux Profile Width,* C.J. Miles, *Massachusetts Institute of Technology;* D.N. Hill, C.J. Lasnier, M.A. Makowski, *Lawrence Livermore National Laboratory;* A.M. Garofalo, *General Atomics* We will explore the dependence of the divertor heat flux profile on plasma current, heating power, midplane edge heat flux, magnetic field strength, and other variables. In divertor tokamaks, a major part of the heating power is lost by thermal transport across the plasma boundary into the scrape-off layer (SOL) where the power is primarily transported along field lines to the divertor. It is important that this high heat flux to the divertor surfaces stays below the technologically feasible perpendicular heat flux of approximately 10 MW/m^2. Thus, it is valuable to determine a multi-parameter scaling of heat flux profile width for projections to a fusion reactor. We will attempt to do so by analyzing divertor heat flux data inferred from high-speed infrared camera measurements of the surface temperature over time.

*Work supported by the US DOE under a National Undergraduate Fellowship in Plasma Physics and Fusion Energy Sciences, DE-ACD52-07NA27344, and DE-FC02-04ER54698.