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Divertor Heat Flux Control Scaled to High Power,* A.W. Leonard, M.A. Mahdavi, T.W. Petrie, *General Atomics*; C.J. Lasnier, *LLNL*; P.C. Stangeby, *U. Toronto* – The control of divertor target heat flux is examined as a function of input power during H-mode in DIII-D. The profile of heat flux parallel to the magnetic field as a function of distance from the target plate is inferred from power balance measurements of surface heat flux and radiated power. The 2D profile of n_e and T_e from divertor Thomson scattering allow interpretation of the parallel transport processes of electron conduction and plasma convective flow. The parallel plasma transport is found to transition from conduction to convection with Mach=1 flow starting at 15 eV. Convective transport increases the volume of divertor plasma with conditions for high radiative dissipation. Increasing input power leads to higher density for transport of the higher heat flux at the same temperature and convective velocity. Implications for divertor heat flux control at reactor level power densities is examined.

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