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β_p Scaling of the Heat Flux Width in DIII-D[1] M.A. MAKOWSKI, C.J. LASNIER, LLNL, A.W. LEONARD, T.H. OSBORNE, GA — The scaling of the heat flux width with poloidal beta at the outer midplane, β_p, is a stringent test of the critical gradient model that posits that the heat flux width is set by an edge stability limit dependent on the separatrix pressure gradient. As β_p was varied by means of a combined density and power scan, the measured pressure gradient was found to scale linearly with β_p at both low (0.5 MA) and high (1.5 MA) plasma currents, and lie significantly below the infinite-n ideal ballooning limit critical pressure gradient as computed by the BALOO code. At fixed I_p, this implies that the separatrix pressure gradient scale length is approximately constant, which is consistent with the kinetic profile measurements. The ballooning limit was found to be constant in the β_p scan and set by the equilibrium with only a minor dependency on the edge pressure and current profiles. Both the pressure gradient and β_p varied by more than a factor of 2 in the scans.

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