Abstract Submitted
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Measurements and modeling of the divertor heat flux width in DIII-D[1] M.A. MAKOWSKI, C.J. LASNIER, Lawrence Livermore National Laboratory, J. NICHOLS, PPPL, A.W. LEONARD, T.H. OSBORNE, P.B. SNYDER, General Atomics — The relationship between measured divertor heat flux and upstream SOL profiles is explored to test critical pressure gradient models of radial energy transport in DIII-D. We are developing a physics based model that extends the well validated kinetic ballooning mode pedestal paradigm up to the separatrix and into the SOL. Evidence in support of this model is that the measured separatrix pressure gradient scales similarly to the critical pressure gradient for the infinite-n ballooning mode obtained from the BALOO code. Recent results have revealed how the heat flux width scales with plasma parameters [1]. The main result is that $\lambda_{sol} \sim B_p^{-1}$ and is independent of all other parameters including machine size. Here λ_{sol} is the heat flux width in the scrape-off-layer (SOL) and B_p is the poloidal field at the outer mid-plane. New measurements of the heat flux width versus the injected power demonstrate a weak dependence, $\lambda_{sol} \sim P_{inj}^{-0.1}$, consistent with other experiments.

[1] T. Eich et al., Phys. Rev. Lett. **107**, 215001 (2011); M.A. Makowski, Phys. Plasmas **19**, 056122 (2012).

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M.A. Makowski
Lawrence Livermore National Laboratory

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