Abstract Submitted for the DPP19 Meeting of The American Physical Society

Non-axisymmetric heat flux patterns on tokamak divertor tiles¹ ANDREAS WINGEN, Oak Ridge National Laboratory, DMITRI ORLOV, UCSD. MATTHEW REINKE, Oak Ridge National Laboratory, IGOR BYKOV, UCSD, TODD EVANS, General Atomics, THOMAS LOOBY, UT Knoxville, THERESA WILKS, MIT — An updated model for divertor heat flux simulation in 3D plasmas with applied RMP finds peak heat fluxes and layer widths compare well to infrared camera measurements in DIII-D. A heat flux model for perturbed plasmas based on guiding center ion drift in vacuum fields [A. Wingen et al., PoP (2014)] is reintroduced. Divertor footprints are simulated for multiple ion kinetic energies and summed, using a Maxwellian distribution as weight factors to account for their respective contribution. Ion drifts cause the heat flux to shift towards the private flux region. Recently, the model was extended to add EB drift effects. It is found that a radial electric field E_r in the near SOL can considerably shift the footprints toroidally, leading to a smear out effect of the incident heat flux, while the E_r inside the separatrix has little impact on footprints. The modeled toroidally averaged heat flux patterns can be fit well to an Eich profile [T. Eich et al., PRL (2011)].

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