Abstract Submitted
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Studies of Ion Incident Angle Distributions for Different Plasma Configurations[1] JESSICA ESKEW, Georgia Institute of Technology, SHOTA ABE, BRUCE E. KOEL, Princeton University, PRINCETON PLASMA PHYSICS LABORATORY COLLABORATION — High particle and heat fluxes from a fusion plasma cause damage to components and vessel walls. The ion impact angle distribution (IAD) for both polar and azimuthal angles at the wall surface is an important parameter for understanding plasma-material interactions (PMI) such as erosion, deposition, and migration within fusion devices. IADs are not yet fully understood because ions are strongly affected by the Chodura sheath. Ion trajectories in the sheath are calculated using a non-collisional kinetic model for different plasma configurations relevant to linear plasma devices, e.g. PISCES-A (UCSD), and tokamak devices, e.g. LTX-β and NSTX-U (PPPL). Micro-trench samples will be designed to verify the calculated IAD results for those plasma devices. Micro-trench samples have been used to measure IADs using DiMES on DIII-D (GA) by analyzing impurity deposition patterns on the trench bottom shadowed from incoming ions by its wall. Calculations using a Monte-Carlo model, micro-patterning and roughness (MPR) code, are planned to simulate sputtering behavior on the micro-trench samples to verify its design.

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Jessica Eskew
Georgia Institute of Technology

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