

Abstract Submitted  
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**Studies of magnetized plasma sheaths with secondary electron emissions using continuum kinetic simulations**<sup>1</sup> PETR CAGAS, Virginia Tech, AMMAR HAKIM, Princeton Plasma Physics Laboratory, BHUVANA SRINIVASAN, Virginia Tech — A continuum kinetic plasma model is used to study magnetized plasma sheaths by directly evolving the ion and electron distribution functions along with Maxwell's equations. Appropriate boundary conditions are included to account for secondary electron emissions at the walls. Secondary electron emission (SEE) from a solid surface can drastically influence the plasma behavior – some recent works suggest that SEE can even reverse the gradient of the electrostatic potential in the plasma sheath. Therefore, a self-consistent SEE model based on real material parameters needs to be included in numerical models. Currently, SEE is commonly implemented using Monte-Carlo algorithms. However, this work presents a novel approach where the full velocity distribution function of SEE is directly constructed using the incident electron population and phenomenological material fits. This distribution function is then used as the boundary condition in the continuum kinetic simulation.

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