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Numerical Confirmation of the Dramatically Reduced Secondary Electron Emission Yield of Velvet-like Surfaces¹ C. SWANSON, I.D. KAGANOVICH, Y. RAITSES, Princeton Plasma Physics Laboratory, Princeton, NJ 08543 — Recent experimentation with Hall Thrusters [1] has shown that the effective secondary electron emission yield of Hall Thruster walls is dramatically reduced by application of velvet-like fibers to the walls. This secondary electron emission suppression is presumably due to re-collision of secondary electrons with the fibers before emitted electrons can return to plasma. A numerical evolution of the resulting electron velocity distribution function of emitted electrons returning to the plasma was performed for this surface geometry; and the results were benchmarked against analytic calculations and experimental findings.

[1] Y. Raitses et. al., IEEE Trans. Plasma Sci. **39**, 995 (2011).

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Charles Swanson
Princeton Plasma Physics Laboratory, Princeton, NJ 08543

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