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Electron Avalanche and Streamer Processes Near a Dielectric Interface with Variable Photo-Electron Emission[1] ASHISH JINDAL, CHRIS MOORE, ANDREW FIERRO, ROY JORGENSON, Sandia National Laboratories — The effects of secondary photo-electron emission from a dielectric surface on electron avalanche and streamer processes are modeled in air at 760 Torr via an electrostatic PIC code which simulates particle-particle collisions using the DSMC method. A quasi-neutral seed plasma is placed near the cathode end of a 2 mm gap. The air chemistry model[1] includes Townsend breakdown and streamer mechanisms, tracking excited state neutrals that can either undergo quenching collisions or spontaneous photon emission transitions[2]. Initial results suggest that photoemission can significantly affect streamer evolution along the dielectric[3]. [1] C. Moore *et al.*, "Development of Kinetic PIC-DSMC Model for Breakdown in the Presence of a Dielectric", ICOPS, Banff, 2016. [2] A. Fierro *et al.*, "Discrete Photon Implementation for Plasma Simulations," Physics of Plasma, 23, 013506, 2016. [3] A. Jindal *et al.*, "Streamer Formation Near a Dielectric Surface with Variable Quantum Efficiency", ICOPS 2017.ε

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