Abstract Submitted
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Warm Magnetized Primary and Secondary Electron Vlasov Equilibria[1] ROBERT TERRY, Enig Associates, Inc. — A Vlasov equilibrium is developed for steady state emission into a magnetized gap in coaxial geometry. The outer cathode boundary conditions are those of a perfect conductor that emits a Maxwellian electron flux radially, azimuthally, and axially. The interior anode boundary conditions are those of a perfect conductor with a fixed secondary emission coefficient ($0 < \gamma \leq 1$). The anode carries a fixed current and the radial gap is set to a fixed voltage. The angular momentum of emitted secondary electrons around the anode is found to materially change the orbit turning points. When energy conserving solutions are examined it is found that the secondaries axial velocities must remain bounded above by a well defined function of radius, magnetic field, and voltage. A fully nonlinear and self consistent Vlasov-Poisson problem is formulated and solved for the space charge distribution implied by the Vlasov equilibrium. The conditions for magnetic insulation of the secondary electron population are then established.

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