Abstract Submitted
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Inertial Electrostatic Confinement Modeling and Comparison to Experiments[1] GILBERT EMMERT, JOHN SANTARIUS, ERIC ALDERSON, DAVID DONOVAN, University of Wisconsin — In inertial-electrostatic confinement (IEC), a high voltage accelerates ions between concentric, nearly transparent grids, usually in spherical geometry. For typical parameters ($\sim$0.3 Pa $\approx$ 2 mTorr, $\sim$100 kV, $\sim$30 mA, $\sim$0.5 m anode diameter), atomic and molecular processes dominate operation. A numerically solved integral equation[1,2] approach to modeling D^+, D_2^+, D_3^+, and D^- ions passing through D_2 background gas will be summarized. The approach yields the energy spectra of ions and neutrals and the radial profile of the neutron production. Comparisons with experimental data for a University of Wisconsin IEC device will be presented.
[1] G.A. Emmert and J.F. Santarius, "Atomic and Molecular Effects on Spherically Convergent Ion Flow I: Single Atomic Species", Phys. Plasmas 17, 013502 (2010)
[2] G.A. Emmert and J.F. Santarius, "Atomic and Molecular Effects on Spherically Convergent Ion Flow II: Multiple Molecular Species", Phys. Plasmas 17, 013503 (2010).

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