

Abstract Submitted
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Destabilization of trapped electron clouds by embedded and collision-generated ions: PIC-MCC simulations MEGHRAJ SENGUPTA, RAJARAMAN GANESH, Inst for Plasm Res — A 2d3v PIC code with facility for Monte Carlo Collisions of plasma with background neutrals has been developed, and is used to simulate ion resonance instability in cylindrical traps. Pure PIC simulations of the classical two-stream / ion resonance instability in partially neutralized electron clouds, reveal interesting dynamics, energetics, and collisionless cross-field transport of the e- and i+ component [1]. In another study a pure electron plasma is loaded with axial velocities that grossly mimic the axial bouncing in traps. MCC are invoked to simulate ionizing and other collisions of e- and generated i+ with background neutrals. The focus here is on understanding how the cloud gets destabilized by dynamically generated ions. The effects of prolonged evolution of the cloud within the same neutral background, and the influence of non ionizing charge-neutral collisions on the growth of the instability are also investigated [2]. Results of these simulations [1,2] will be presented.

- [1] M. Sengupta and R. Ganesh (Accepted in Phys. Plasmas: 30th June 2015)
[2] M. Sengupta and R. Ganesh (Manuscript in preparation)

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