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**Two-dimensional simulations of the inertial electrostatic confinement device** ALBERTO MAROCCHINO, GIOVANNI LAPENTA, EVSTATI EVSTATIEV, RICHARD NEBEL, JAEYOUNG PARK, LANL — We discuss the application of the CELESTE simulation package to the simulation of the experiments conducted at the Los Alamos Inertial Electrostatic Confinement (IEC) device. Recently considerable experimental advances have been made in understanding of the stability of the virtual cathode and in the physics of POPS. This momentous experimental advance requires a new simulation effort for explaining the new experimental findings, particularly in the area of stability of the configurations obtained experimentally. We have conducted a 2D stability study of the virtual cathode in the IEC device using the DEMOCRITUS package. DEMOCRITUS is a 2D general geometry electrostatic PIC code. In the present study we have done complete stability study and investigate the two-stream instability occurring in the IEC device.

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