ABSTRACT

The confinement of particles in a nonneutral plasma trap is thought to be limited by electric or magnetic fields which break the cylindrical symmetry of the trap. A new device has been constructed which will allow us to study the dynamics of test electrons in such a trap. The self-field of a plasma column is simulated by a biased wire placed along the axis of the trap. The wall of the central confinement region is divided into many sections so that asymmetric potentials may be applied. The device is run in an inject-hold-dump cycle. After injection, test electrons are confined for a variable length of time. The position of the electrons is determined by dumping them onto a phosphor-coated quartz plate and observing the image. The evolution of the electrons is obtained by varying the dump time.

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