

Abstract Submitted
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Long-Time Measurements of Test Particle Radial Distributions¹ D.L. EGGLESTON, N.A. KRIEGE, Occidental College — We have recently installed a cooled, slow-scan CCD camera on the Occidental nonneutral plasma trap. The decreased dark current, noise level, and increased sensitivity (quantum efficiency > 80%) of this camera have allowed us to obtain high resolution (440 pixels across the 3 inch machine diameter) phosphor screen images of the line-integrated test particle evolution over times comparable to the particle loss time (~ 10 sec). By adjusting the negative bias of the central wire it is possible to study cases where either mobility or diffusion is dominant. Initial electron distributions are roughly annular with some radial oscillations. These oscillations rapidly smooth out leaving a self-similar, single-peaked annular distribution which decays exponentially in time. In the mobility dominated case, this is accompanied by the overall outward motion of the density profile, while in the diffusive case the profile spreads both radially inward and outward. Preliminary experiments with applied DC asymmetries find the profile decay rate increases linearly with the perturbation amplitude.

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☐ Prefer Oral Session
☒ Prefer Poster Session

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