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Experimental Test of Resonant Particle Transport Theory[1] D.L. EGGLESTON, Occidental College — It has long been suggested that the single-particle resonant transport theory developed for tandem mirrors might be able to explain asymmetry-induced transport in Malmberg-Penning traps.[2] We have recently adapted this theory to non-neutral plasmas[3] and are attempting an experimental test under the simplest possible conditions. The experiment[4] employs forty wall sectors in order to apply an asymmetry consisting of a single Fourier mode: $\phi_1 = \phi_{nl\omega} \exp\left[i\left(\frac{n\pi}{L}z + l\theta - \omega t\right)\right]$. The electron density is kept low enough to avoid complications due to collective effects (shielding and waves) while the usual azimuthal $E \times B$ drift is maintained by a negatively biased central wire. We have confirmed the dominant role played by resonant particles[5] and here report on an absolute comparison between experimental and theoretical values for the radial particle flux. Interestingly, our initial results indicate that the experimental flux is forty times *smaller* than the theoretical value.

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[2]C.F. Driscoll and J.H. Malmberg, Phys. Rev. Lett. **50**, 167 (1983).
[3]D.L. Eggleston and T.M. O'Neil, Phys. Plasmas **6**, 2699 (1999).
[4]D.L. Eggleston, Phys. Plasmas **4**, 1196 (1997).
[5]D.L. Eggleston, Bull. Am. Phys. Soc. **43**, 1805 (1998).

☐ Prefer Oral Session
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