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Effect of a central "squeeze" potential on asymmetry-induced transport[1] D.L. EGGLESTON, Occidental College — We report on initial experiments measuring the radial particle flux produced when a "squeeze" voltage ($V_{sq} \sim \pm 1$ V) is applied to the center ring (S3) of our cylindrical Malmberg-Penning trap at the same time as the voltages producing our usual asymmetry potential $\phi_1(r)\cos(kz)\cos(\omega t - l\theta)$. Two results are of interest: 1) When a negative DC squeeze voltage is applied to S3, the flux produced by the asymmetry is reduced by a factor $e^{(V_{sq}/V_0)}$ where $V_0 \approx 1.2$ V. Evidently, particles need to be able to transit the entire machine to produce transport. This is consistent with our transport model but the scale factor V_0 is much larger than expected. 2) When symmetric $\pm$ voltages are applied to the two azimuthally-divided halves of S3, DC or low-frequency voltages increase the radial flux while high-frequency voltages decrease it. In similar experiments, others[2] have attributed such transport changes to induced chaotic particle orbits, but we note that the squeeze voltage itself produces transport and the resulting modification of the plasma may also be a factor in changing the observed flux. We have not yet found a way to distinguish between these two effects.

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[2]Daniel H.E. Dubin et al., Phys. Plasmas **19**, 056102 (2012).

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