Abstract Submitted
for the DPP00 Meeting of
The American Physical Society

Sorting Category: 1.2.0 (Experimental)

Amplitude Scaling of Asymmetry-Induced Transport: A Second Look[1] D.L. EGGLESTON, B. CARRILLO, Occidental College — Our initial experiments[2] on asymmetry-induced transport in non-neutral plasmas found the radial particle flux at small radii to be proportional to ϕ^2, where ϕ is the applied asymmetry amplitude. However, other researchers[3], using the global expansion rate as a measure of the transport, have observed a ϕ^1 scaling when the rigidity (the ratio of the axial bounce to the azimuthal rotation frequency) is in the range 1 - 10. In an effort to resolve this discrepancy, we have extended our measurements to different radii and asymmetry frequencies. Although the results to date are generally in agreement with those previously reported (ϕ^2 scaling at low asymmetry amplitudes falling off to a weaker scaling at higher amplitudes), we have observed some cases where the low amplitude scaling is closer to ϕ^1. However, both the ϕ^2 and ϕ^1 cases have rigidities less than ten. Instead, we find that the ϕ^1 cases are characterized by an induced flux that is comparable in magnitude but opposite in sign to the background flux.

[1]Supported by DOE grant DE-FG03-98ER54457 and NSF-CAMP
[2]D.L. Eggleston, in *Non-Neutral Plasma Physics III*, AIP Conference Proceedings 498, 1999, pp. 241-249.
[3]Jason M. Kriesel and C. Fred Driscoll, *op. cit.*, pp. 256-265.

☐ Prefer Oral Session
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Dennis L. Eggleston
dleggles@oxy.edu
Occidental College

Date submitted: July 11, 2000

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