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Empirical Scaling of Peak Flux Frequency in Asymmetry-Induced Transport[1] D.L. EGGLESTON, B. CARRILLO, Occidental College — One of the key ideas in the theory of asymmetry-induced transport is that the transport will be dominated by particles with velocities satisfying a resonance condition[2]. As a result, the particle flux will peak as this resonant velocity moves through the distribution function. Our initial transport experiments[3] using a variable frequency asymmetry to adjust the resonant velocity showed such flux peaks, and we tentatively took these as support for the theory. To further test the theory, we have measured the frequency f_{peak} at which these flux peaks occur as a function of radius r, magnetic field B, and center-wire bias ϕ_{cw}. Our empirical scaling gives $f_{peak} \propto (\phi_{cw}/rB)^{0.5\pm0.1}$. While this scaling is qualitatively similar to that predicted by theory (f_{peak} increases with ϕ_{cw}, decreases with r and B), it is not consistent with more detailed predictions. Correcting the theory would seem to require, at least, a change in the expression for the resonant velocity.

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[2]D.L. Eggleston and T.M. O'Neil, Phys. Plasmas 6, 2699 (1999).
[3]D.L. Eggleston, in *Non-Neutral Plasma Physics III*, AIP Conference Proceedings 498, 1999, pp. 241-249.

☐ Prefer Oral Session
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