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Linear and Quasilinear Model for Pressure-Driven Interchange and Entropy Modes in a Warm Electron Dipole Plasma[1] M. MAUEL, D. GARNIER, T. ROBERTS, Columbia University, J. KESNER, MIT Plasma Science and Fusion Center — The measured structures of electrostatic interchange modes in dipole-confined plasma cause global mixing when driven by energetic trapped electrons, sonic plasma, or warm electron pressure. Global circulation also appears in planetary magnetospheres driven by solar wind, but differences exist in underlying physics. Breaking azimuthal symmtry in magnetospheres caused currents to flow through the ionosphere, which regulate interchange motion.[2] In the laboratory, there are no field-aligned currents and perturbations induce ion-inertial currents, which determine the global linear model structure. In this poster, the linear description of global interchange and entropy modes are presented for the CTX and LDX laboratory magnetospheres computed from the flux-tube averaged gyrofluid equations.[3] Additionally, the quasilinear particle and heat flux are calculated and show turbulent self-organization that drives profiles to become centrally-peaked.[4]

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[2]Lyon, *Science*, **288**, 1987 (2000).
[3]Ricci, *et al.*, *Phys Plasmas*, **13** 062102 (2006).
[4]Kesner, *et al.*, *Phys Plasmas*,**18**, 050703 (2011).

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