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Vlasov evolution and stability of bipolar electrostatic field structures comoving with electrons in a broad nonthermal tail[1] DAVID L. NEWMAN, MARTIN V. GOLDMAN[2], University of Colorado — As shown by M. V. Goldman (this meeting), weak bipolar fields associated with shallow phase-space holes tend to be wider when comoving with electrons near the high-velocity edge of a broad nonthermal tail than theory [1] predicts for holes comoving with background thermal electrons. Here, we employ 1-D Vlasov-Poisson simulations to study routes by which such tail-resonant holes can form, and whether they are stable at all velocities for which there are analytical stationary solutions. We extend this numerical analysis beyond the weak-potential limit, including cases where the depletion of phase-space density on trapped electron orbits becomes vanishingly small. We also consider the self-consistent generation of both a broad tail and electron holes via saturation of the Buneman instability driven by electron-ion drift.
[1] M. V. Goldman, D. L. Newman, and A. Mangeney, "Theory of Weak Bipolar fields and Electrons Holes with Applications to Space Plasmas," *Phys. Rev. Lett*, **99**, 145002 (2007).

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[2]Center for Integrated Plasma Studies and Department of Physics

David L. Newman
University of Colorado

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