

Abstract Submitted  
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**Inertialess Electron Dynamics in Collisionless and Weakly Collisional Regimes**<sup>1</sup>

F.L. HINTON, GA — By taking the limit of zero electron mass, the drift kinetic equation is considerably simplified, since the electron transit time scale is removed. This also makes the equations less challenging to solve computationally. When the electron collision frequency is very small, the resulting equations [1] have the property that magnetic flux is conserved, and the magnetic flutter transport is zero. This collisionality regime is compared with a regime with the collision frequency not so small, in which dissipation and magnetic flutter transport are possible. Based on simple estimates, magnetic flutter transport is expected to be significant when the electron beta (ratio of electron pressure to magnetic pressure) exceeds the square root of the electron to ion mass ratio.

[1] F.L. Hinton, et al., “Reduced Equations for Electromagnetic Turbulence in Tokamaks,” submitted to Phys. Plasmas.

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Prefer Oral Session

Prefer Poster Session

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