

Electron Holes and Heating in the Reconnection Dissipation Region

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Using particle-in-cell simulations and kinetic theory, we explore the current-driven turbulence and associated electron heating in the dissipation region during 3D magnetic reconnection with a guide field. At late time the turbulence is dominated by the Buneman and lower hybrid instabilities. Both produce electron holes that co-exist but have very different propagation speeds. The associated scattering of electrons by the holes enhances electron heating in the dissipation region.

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