

Abstract Submitted
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Kinetic Particle-in-Cell Simulations and Generation of Current Sheets in High Temperature Turbulent Plasmas MICHAEL SHAY, PIN WU, University of Delaware, HOMA KARIMABADI, University of California, San Diego, WILLIAM MATTHAEUS, MINPING WAN, University of Delaware, VADIM ROYTERSHTEYN, University of California, San Diego, WILLIAM DAUGHTON, Los Alamos National Lab — An important unsolved problem in plasma turbulence is how energy is dissipated at small scales. Particle collisions are too infrequent in hot plasmas to provide the necessary viscosity. We simulate strong turbulence using kinetic PIC simulations, starting with shear flow dominated initial conditions that are unstable to Kelvin-Helmholtz. The system generates strong electron scale current sheets which eventually reconnect. We examine the dissipation mechanisms in the system to determine if these current sheets are playing an important role in the damping of turbulent energy [1]. Preliminary results for other initial conditions will also be presented.

[1] Karimabadi et al., Coherent Structures, Intermittent Turbulence and Dissipation in High-Temperature Plasmas, Submitted to *Nature*, 2012.

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