Abstract Submitted
for the DPP12 Meeting of
The American Physical Society

Dissipation Mechanisms of Kinetic Plasma Turbulence JASON TENBARGE, University of Iowa — Turbulence plays an important role in space and astrophysical plasmas by mediating the transfer of energy from large-scale motions to the small scales at which the turbulence can be dissipated. However, the dominant physical mechanisms that dissipate the small-scale turbulent motions remain unidentified. The dynamics at the dissipative scales are typically weakly collisional in diffuse astrophysical plasmas, such as the solar wind, so the mechanisms responsible for the dissipation and plasma heating are described by kinetic plasma physics. Two mechanisms have been proposed to be the dominant dissipation processes for plasma turbulence: collisionless wave-particle interactions and dissipation in small-scale current sheets. We investigate the relative importance of dissipation via collisionless wave-particle damping versus dissipation in small-scale current sheets in weakly collisional plasma turbulence via three-dimensional, non-linear gyrokinetic and particle-in-cell simulations.

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Date submitted: 13 Jul 2012 Electronic form version 1.4