Abstract Submitted
for the APR13 Meeting of
The American Physical Society

Transport Properties and Radiation Production in Plasmas with Sub-Larmor-Scale Magnetic Turbulence[1] B. KEENAN, M.V. MEDVEDEV, U. Kansas — Kinetic streaming instabilities, such as the Weibel instability, occur in various astrophysical systems, e.g., collisionless shocks and reconnection sites. Such instabilities generate strong (sub-equipartition) magnetic fields which reside at small, sub-Larmor spatial scales. Efficient electron acceleration to relativistic energies is not uncommon in such environments. Spectra of radiation emitted by these relativistic electrons can deliver wealth of information about the internal structure of such "Weibel turbulence." The small-scale fields simultaneously drive the particle transport via pitch-angle diffusion. Both effects are related and can be used to diagnose the plasma state. We study such a relation between transport and radiation in sub-Larmor-scale turbulence via numerical simulations and analysis.

[1]Supported by grants DE-FG02-07ER54940 (DOE) and AST-1209665 (NSF).

Mikhail Medvedev
U. Kansas

Date submitted: 10 Jan 2013 Electronic form version 1.4