

Abstract Submitted
for the DPP10 Meeting of
The American Physical Society

Gyrokinetic Particle Simulation of Alfvén Turbulence XI CHENG, ZHIHONG LIN, University of California, Irvine — The issue of spectral cascade and plasma heating in Alfvénic turbulence is a major unsolved problem in plasma physics. Gyrokinetic particle simulation is applied in this work to study the cascade and heating in Alfvénic turbulence with fully self-consistent nonlinear kinetic effects. A massively parallel particle-in-cell 3D code with gyrokinetic ions and fluid-kinetic hybrid electrons is used to study spectral cascading and dissipation of Alfvénic turbulence. A magnetic energy spectrum with index of “-5/3” in the inertial range has been observed from the gyrokinetic simulation. The code will be used to study energy dissipation in the Alfvénic turbulence on the spatial scale of the order of ion gyro-radius.

Xi Cheng

Date submitted: 20 Jul 2010

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