

Abstract Submitted  
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**Gyrokinetic Particle Simulation of Kinetic Alfvén Wave XI**

CHENG, ZHIHONG LING — Random magnetic fluctuations resembling Alfvén waves are ubiquitously observed in laboratory, space and astrophysical plasmas. The issue of spectral cascade and plasma heating in Alfvénic turbulence is a major unsolved problem in space 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 Coarse-grained MPI/openMP parallelization strategy has been used for large scale simulation. A massively parallel, electromagnetic, kinetic, non-linear, particle-in-cell code with gyrokinetic ions and fluid-kinetic hybrid electrons is being developed to study the coupling between shear Alfvén wave and ion acoustic wave, which lead to energy exchange between waves and particles.

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