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Gyrokinetic Particle Simulation of Kinetic Alfvén Wave Turbulence ONNIE LUK, XI CHENG, PETER PORAZIK, ZHIHONG LIN, University of California, Irvine — The previous studies of spectral cascade in Alfvénic turbulence clearly show signs of plasma heating, and there are several highly-debated explanations to this phenomenon. We have developed a nonlinear gyrokinetic particle simulation to study the perpendicular spectral cascade caused by Landau damping of kinetic Alfvén wave, which is one of those possible heating mechanisms. The nonlinear gyrokinetic code includes scalar potential, vector potential, and compressional magnetic perturbation to form a complete, self-consistent nonlinear simulation. We will discuss the simulation results in comparison with earlier simulation without the compressional magnetic perturbation.

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