Geophysical Research Abstracts
Vol. 20, EGU2018-18870, 2018
EGU General Assembly 2018

Properties of relaxing turbulence at sub-proton scales

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We perform kinetic particle-in-cell simulations of relaxing turbulence at sub-proton scales. Initial velocity field represents the classic Taylor-Green flow in a fully symmetric box. Three different configurations of superimposed magnetic field were studied. In all cases the global magnetic cross-helicity equals to zero initially. We report and compare properties and evolution of the turbulence in the three simulations. In many aspects, they appear to be rather similar and independent of the initial magnetic field, in contrast to the previously published MHD simulations. At the moment of peak dissipation ($\sim$a few turnover times) all configuraions establish dissipation spectra with the universal slopes of -2.5 and -1 for B and E, respectively. However, some discrepancies are observed in the velocity fluctuations spectra which we interpret in terms of misalignment of ion velocity and magnetic field. It emerges from the differences in the initial alignment of the Taylor-Green flow and the superimposed magnetic field, which may, or may not be zero in each point of the domain.