

Abstract Submitted
for the DFD09 Meeting of
The American Physical Society

Direct Numerical Simulation for the MHD Homogeneous Shear Turbulence with the Several Parameter Sets MASAYOSHI OKAMOTO, DAISUKE HAMADA, Department of the Mechanical Engineering, Shizuoka University — The MHD homogeneous shear turbulent flows with the several initial ratios of the magnetic energy to the kinetic energy, magnetic Prandtl number, shear rates and initial profiles of the cross helicity are investigated by means of the direct numerical simulation. The transformation term between the kinetic and magnetic energy, which is closely connected with the Lorenz force, plays an important role of the interaction between the velocity and magnetic fields. In the cases of the large initial energy ratio and high magnetic Prandtl number, the magnetic energy is converted into the kinetic one and from the result of the energy spectrum budget this converting phenomenon occurs over the wide length scale. On the other hand, the inverse conversion is caused in the large scale in the case of the small initial energy ratio, small magnetic Prandtl number and the high shear rate. The difference among the initial cross helicity has an influence on the time development of the mean quantities immediately after the calculation start.

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Date submitted: 05 Aug 2009

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