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**Energy Budget in Decaying Compressible MHD Turbulence**

YAN YANG, MINPING WAN, Southern University of Science and Technology, WILLIAM MATTHAEUS, University of Delaware — We study the decay of compressible magnetohydrodynamic (MHD) turbulence emphasizing exchanges of energy between compressive and incompressible flows, magnetic field energy, and thermal energy. A three dimensional compressible MHD code is employed that has been shown to be suitable for both incompressible and compressible flows. Varying the nature of initial conditions and initial Mach numbers permits examination of various dynamical regimes characterized here by the changes between different energy reservoirs. Acoustic waves are responsible to the oscillatory exchange between compressive kinetic and thermal energy through the pressure dilatation term. The results indicate that exchange between flow and magnetic energy is dominated by interactions involving the solenoidal velocity. Several systematic rapid adjustments are found to be reproducible with simple scalings derived from the empirical data.

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