



Large eddy simulation of compressible magnetohydrodynamic turbulence in the local interstellar medium

A. Chernyshov, K. Karel'sky, and A. Petrosyan

Space Research Institute of the Russian Academy of Sciences, Moscow, Russia (achernyshov@iki.rssi.ru)

Large eddy simulation method is applied to carry out three-dimensional numerical simulation of compressible magnetohydrodynamic turbulence in conditions relevant local interstellar medium. According to large eddy simulation method, the large-scale part of the flow is computed directly and only small-scale structures of turbulence are modeled. The small-scale motion is eliminated from the initial system of equations of motion by filtering procedures and their effect is taken into account by special closures referred to as the subgrid-scale models. Establishment of weakly compressible limit with Kolmogorov-like density fluctuations spectrum is shown in present work. We use our computations results to study dynamics of the turbulent plasma beta and anisotropic properties of the magnetoplasma fluctuations in the local interstellar medium.