



[Previous abstract](#) | [Graphical version](#) | [Text version](#) | [Next abstract](#)

Session CM1 - Mini Conference on Turbulence in the Interstellar Medium and Solar Wind II.
ORAL session, Monday afternoon, November 15
Fifth Avenue, The Westin Seattle

[CM1.06] Reduced Models of MHD Turbulence: Implications for Density Fluctuations and Anisotropic Spectra

A. Bhattacharjee, C. S. Ng (Department of Physics and Astronomy, The University of Iowa.)

Recent developments in the derivation of reduced models for weakly compressible magnetohydrodynamic (MHD) turbulence are discussed. A four-field system of equations has been derived from the compressible MHD equations to describe turbulence in the interstellar medium and the solar wind. These equations apply to a plasma permeated by a spatially varying mean magnetic field when the plasma beta is of the order unity or less. In the presence of spatial inhomogeneities, the four-field equations predict pressure fluctuations of the order of the Mach number of the turbulence, as observed by Helios 1 and 2. In the presence of a uniform background field and a spatially homogeneous plasma, the four-field system reduces to the so-called nearly incompressible system. In the weak-turbulence limit, dominated by three-wave interactions, the anisotropic energy spectrum is deduced by a combination of exact analytical results and numerical simulations.

■ [Part C of program listing](#)