Japan Geoscience Union Meeting 2014
(28 April - 02 May 2014 at Pacifico YOKOHAMA, Kanagawa, Japan)

PEM10-03 会場:414 時間:4 月 29 日 14:50-15:10

Development and Properties of Compressible MHD Turbulence in High-Beta Plasmas
Development and Properties of Compressible MHD Turbulence in High-Beta Plasmas

JONES, Thomas[1*] ; RYU, Dongsu[2] ; PORTER, David[1] ; EMMERICK, Andrew[1] ; CHO, Jungyeon[3]
JONES, Thomas[1*] ; RYU, Dongsu[2] ; PORTER, David[1] ; EMMERICK, Andrew[1] ; CHO, Jungyeon[3]

[1]University of Minnesota, [2]Ulsan National Institute of Science and Technology, [3]Chungnam National University
[1]University of Minnesota, [2]Ulsan National Institute of Science and Technology, [3]Chungnam National University

Many cosmic plasmas, including those in the solar wind and extra-galactic environments, are high beta = P_g/P_B>1, so that as turbulence develops, magnetic stresses are, at least initially, weak. As the turbulence evolves, magnetic stresses become increasingly important on scales below the driving scales. Depending on the initial field strength and topology this evolution can take many large-scale eddy times to reach saturation. Even in subsonic turbulence, shocks can form and influence turbulence evolution and properties. We have carried out an extensive set of high resolution compressible MHD simulations of the evolution of such turbulence for a range of initial magnetic field strengths and topologies. Here we report on their properties and the astrophysical implications of those properties. This work is supported at the University of Minnesota by the US National Science Foundation and the Minnesota Supercomputing Institute.

キーワード: MHD Turbulence, High Beta Plasma
Keywords: MHD Turbulence, High Beta Plasma