ABSTRACT FINAL ID: SH41C-07;

TITLE: Enhanced spectral anisotropies near the proton-cyclotron scale: Possible two-component structure in Hall-FLR MHD turbulence simulations

SESSION TYPE: Oral

SESSION TITLE: SH41C. Solar Wind Turbulence: Theory, Observations, and Future Instrumentation I

AUTHORS (FIRST NAME, LAST NAME): Sanjoy Ghosh[1], Melvyn L Goldstein[2]

INSTITUTIONS (ALL): 1. Applied Physics Lab, Johns Hopkins University, Laurel, MD, United States.
2. Geospace Physics Laboratory, NASA Goddard SFC, Greenbelt, MD, United States.

Title of Team:

ABSTRACT BODY: Recent analysis of the magnetic correlation function of solar wind fluctuations at 1 AU suggests the existence of two-component structure near the proton-cyclotron scale. Here we use two-and-one-half dimensional and three-dimensional compressible MHD models to look for two-component structure adjacent the proton-cyclotron scale. Our MHD system incorporates both Hall and Finite Larmor Radius (FLR) terms. We find that strong spectral anisotropies appear adjacent the proton-cyclotron scales depending on selections of initial condition and plasma beta. These anisotropies are enhancements on top of related anisotropies that appear in standard MHD turbulence in the presence of a mean magnetic field and are suggestive of one turbulence component along the inertial scales and another component adjacent the dissipative scales. We compute the relative strengths of linear and nonlinear accelerations on the velocity and magnetic fields to gauge the relative influence of terms that drive the system with wave-like (linear) versus turbulent (nonlinear) dynamics.

KEYWORDS: [7863] SPACE PLASMA PHYSICS / Turbulence, [7839] SPACE PLASMA PHYSICS / Nonlinear phenomena, [7868] SPACE PLASMA PHYSICS / Wave/wave interactions.

(No Image Selected)

(No Table Selected)

SPONSOR NAME: Sanjoy Ghosh

Additional Details

Previously Presented Material:

Contact Details