Turbulent cascade in the solar wind on ion scales

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Magnetic power spectra in the solar wind typically exhibit a transition, steepening, on characteristic ion scales. This transition is not yet fully understood. Two basic phenomena are usually suspected: Hall physics and dissipation. We investigate properties of this transition using numerical simulations. We analyze results of two-dimensional hybrid simulations using a compressible version of von Kármán-Howarth equation for statistically homogeneous Hall MHD turbulence and compare these results to the predictions for the incompressible Hall MHD. The simulation results indicate that the transition between large, MHD and sub-ion scales is related to a combination of the Hall effect and ion heating/energization.