

Characteristics of plasma and magnetic field turbulence on transition to kinetic scales

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The turbulence properties at a transition from MHD to kinetic scales are usually studied for magnetic or electric field variations because the time resolution of plasma measurements generally does not reach the transition frequency. The BMSW instrument onboard the Spektr-R spacecraft provides a high-time resolution data (31 ms) of the ion flux, velocity, density, and temperature suitable for an analysis of fluctuations up to 16 Hz. The paper focuses on the statistical analysis of the power spectral densities of the ion density and velocity. The results are compared with similar analysis of magnetic field variations recorded by Wind on corresponding intervals. The analysis revealed that the density spectrum flattens on approach to kinetic scale but this flattening is not observed in velocity spectra and only exceptionally in the magnetic field. The break between scales seems to be controlled by ion gyromotion for all investigated parameters.