



Evolution of the kinetic-scale plasma turbulence across the Earth's magnetosheath

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Magnetosheath is the best natural laboratory for exploring the turbulence which evolves in a bounded space. The magnetopause and the bow shock contribute to the cascade formation serving as constraints for freely developing turbulence. To date these effects were discussed in the literature with the help of magnetic field data generally. Here we use advantages of the BMSW instrument on board the Spektr-R spacecraft which measures plasma parameters with time resolution up to 31 ms. Spectra of ion flux value fluctuations at different locations inside the magnetosheath are considered in the present study. We analyze the boundaries' influence on the type of a spectrum shape. We also present distributions of spectral parameters' values such as spectral slopes in the inertial and dissipation ranges and the frequency, which separates these ranges (break frequency), at regions close to the bow shock or the magnetopause and in the middle part of the magnetosheath. We show that occurrence rate of different types of spectral shapes changes across the magnetosheath. We also show kinetic part of the spectra to be significantly steeper in the vicinity of the quasi-parallel bow shock than in the rest part of the magnetosheath.