



Modification of kinetic-scale plasma turbulence at the Earth's bow shock

Liudmila Rakhmanova, Maria Riazantseva, Georgy Zastenker, and Mihail Verigin

Space Research Institute of RAS, Space Plasma Physics, Moscow, Russian Federation (rakhnud@gmail.com)

The Earth's magnetosheath serves as a natural laboratory for exploration of turbulence which evolves in bounded space. Shock waves are supposed to be sources of extra energy which lead to changes in turbulent cascade. Present study focuses on modification of plasma fluctuation spectra in frequency range 0.01-10 Hz across the Earth's bow shock. We use the advantages of the BMSW device on board the Spektr-R satellite which provides measurements of ion flux value and its direction with time resolution of 31 ms. Statistical study of ion flux fluctuations is prepared upstream and downstream the bow shock. Substantial difference was found out in distributions of indices of ion flux fluctuation spectra. At MHD scales (below the ion spectral break) spectra are flatter than those in the solar wind and those predicted in Kolmogorov's theory. At kinetic scales (above the ion spectral break) steepening of the spectra occurs downstream the bow shock compared to the solar wind spectra. The results of statistical study was supplemented with analysis of several crossings of the bow shock by the Spektr-R spacecraft.