

# **Magnetospheric turbulence and properties of magnetospheric dynamics**

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One of the main features of magnetospheric dynamics is the existence of high level of magnetospheric turbulence. Results of experimental observations of characteristics of magnetospheric turbulence are summarized and compared with the characteristics of solar wind turbulence. Mechanisms of the generation of magnetospheric turbulence are analyzed. The instabilities of the plasma pressure distribution are selected as the sources of large and medium scale harmonics in the spectra of magnetospheric turbulence. Large-scale harmonics (harmonics with the scales comparable with the scale of magnetosphere) lead to convective transport of magnetospheric particles. Medium-scale harmonics (vortices with the scales  $\sim 1000$  km) lead to the appearance of quasidiffusive anomalous particle transport. Properties of the quasiequilibrium particle distribution formed in the conditions of compensation of convective and quasidiffusive transport are analyzed. The influence of the quasidiffusive particle transport on the main properties of large-scale magnetospheric dynamics including particle penetration through the magnetopause, magnetospheric substorms and storms is discussed.