



# 1 Terrestrial cusp: magnetic turbulence and regular oscillations

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This report presents some new conclusions relating to the magnetic turbulence properties in the terrestrial cusp region, which have been recently obtained from the Cluster experimental data in-depth analysis. In this analysis frames the estimations of relative contribution of coherent oscillations in the turbulence energy are carried out and the energy distributions over the wave number and the frequency are determined. It was found that in the frequency range 0.01 Hz – 5.6 Hz this contribution amounts on average in various parts of the cusp region from ~70% up to ~90% of total turbulence energy. Thus, the regular oscillations are dominating in cusp turbulence – this is unexpected fundamental result. The typical energy distributions over the wave number and the frequency in plasma frame have the features clearly indicating to the wave decay processes as the most probable in this region. The wave generation mechanism and the cascade processes from the low to the higher wave numbers are discussed. It is shown that the resonant transitions between the ion cyclotron harmonics may lie in the base of these processes.