**TRANSFORMATION OF TURBULENT SOLAR WIND SPECTRA WITHIN SHELL-MODEL APPROACH**

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Solar wind is one of the most significant links in the Sun - Earth system, however neither its forming process, nor its evolution physics are clarified yet. This fact served as the main reason for launching the Parker Solar Probe (PSP) spacecraft mission focused on solar wind research. For the first six years, the mission has provided a vast inflow of new data with high temporal resolution and wide variation of heliocentric distances. In particular, it enabled a detailed study of solar wind field fluctuation spectra, i.e. velocity and magnetic fields, and a new look at a turbulent cascade in interplanetary plasma [1].

The PSP data proved the previously detected presence of two spectral breaks in the picture of the spectral density of magnetic field energy fluctuation. The first one is close to subionic scale and the second one is on the left edge of the inertial interval, i.e. in the large vortices area. There isn't a universal opinion about these markers evolution yet, therefore studying these breaks dynamics is still the key one. While the kinetic approach seems to be necessary to describe the near-dissipation break, it is possible to describe the large-scale break evolution within MHD. Besides, the issues of which Reynold’s numbers [2] are observed in solar wind plasma and how they influence energy balance, and what role the helicity relation plays are still not solved.

To describe a turbulent cascade, we use a shell or, in other words, cascade model taken from [3]. The shell-model class for hydrodynamic systems [4] is Fourier images of MHD-equations system with non-linear term approximation by the sum of quadratic nonlinearities to follow 3D MHD conservation laws in a dissipation-free case. Meanwhile, the continuous spectral scale is replaced by the sequence of discrete shells and in non-linear terms, energy transition through the adjacent shells only is taken into account. Within such an approach, the PSP data near the Sun are considered initial, and possible spectra evolution and a large-scale break movement dynamics during the process of free turbulent cascade devolution are studied. The obtained results of cascade modelling are compared with the PSP data on the Sun - Earth axis, and, based on the comparison, the conclusion about shell-model analysis and free devolution hypothesis applicability is made.

The authors express their sincere gratitude to P. G. Frick for valuable advice and the given model and also to the PSP and CDAWEB team for the provided spacecraft data.

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