

FRACTAL FEATURES IN THE TURBULENT PULSATIONS OF COSMIC PLASMA AND PLANETARY ATMOSPHERE SYSTEM

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The previous experiments [1] have detected that processes in the atmosphere at heights 10–20 km are extremely influenced by the galactic cosmic rays (GCR) with the protons' energies of $10^{11} \div 10^{15}$ eV. Strong variations of these rays (a few tens of percents) coincide with the solar activity cycles and atmospheric perturbation variations induced by the separate flares on the Sun. The spectrum of turbulent pulsations induced in the atmosphere by the galactic-cosmic rays is defined. A possible manifestation of genesis of fractal dimensions in the system of “spectrum of turbulent pulsations of cosmic plasma – galactic-cosmic rays’ spectrum – spectrum of atmospheric turbulent pulsations” is analyzed [2]. It is considered possibility for the existence of spectrum of Kolmogorov-Obukhov turbulent kinetic energy dissipation induced by the GCR in the atmosphere and it establishes the attractive problem associated with the genesis of scaling invariance and scaling representation of turbulent spectrums.

[1] Pudovkin, M.I, Raspopov, O.M. Geomagn. Aeronomy 32, 593 (1992).

[2] Rusov V., Glushkov A., Khetselisu O. etal, Advances in Space Res. 42, 1614 (2008).

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