SIMULATIONS OF SELF-CONSISTENT RADIOWAVE DAMPING BY AN ARTIFICIAL IONOSPHERE TURBULENCE

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The numerical simulations of the influence of self-consistent incident powerful electromagnetic wave absorption arising in the regions of plasma turbulence excitation to reflection dynamics are carried out. The non-linear Schrödinger equation in inhomogeneous plasma layer with incident wave pumping and radiation damping (Kochetov A.V., Mironov V. A., Terina G.I., Strong Turbulence Effects in Artificially Disturbed Ionosphere, Adv. Space. Res. 2002, vol. 29, No. 9, p. 1369) is extended with the imaginary part of plasma dielectric permitivity in the regions with strong electromagnetic field in correlation to (V. D. Shapiro, V. I. Shevchenko, Handbook of Plasma Physics, Eds. A. A. Galeev, R N. Sudan, Elsevier, 1984, vol. 2, p. 119). The large range of damping parameters: absolute value, threshold, amplitude function, including hysteretic dependence, is studied. For some regimes it is obtained that the calculated reflection index dynamics agrees qualitatively to the experimental results (B. Thide, E. N. Sergeev, S. M. Grach,T. B. Leyser, T. D. Carrozi, Competition between Langmuir and upper hybrid turbulence in an HF pumped ionosphere, Phys. Rev. Lett., 2005, vol. 95, no. 25, p. 255002).

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