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The Spikes-Phenomenon Simulation in Artificially Disturbed Ionosphere

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The results of the numerical modelling of spikes-phenomenon for powerful emission interaction with ionospheric plasma are presented. “Spikes” are the quasi-periodic oscillations of the amplitude of the heating and probing radio waves, arising at the initial stage of HF heating of the ionosphere (see, e.g., Erukhimov L.M. et.al., Geomagnetizm and Aeronomia, 1983, v.23, p.433). Numerical solution of the nonlinear Schrodinger equation with driven extension (A.V. Kochetov, V.A Mironov, G.I. Terina, Adv. Space Res. 2002, Vol.29, No.9, p.1369) were carried out in inhomogeneous plasma with unperturbed linear density profile for the different amplitudes and frequency shift between heating radio waves and probing ones. The time evolution of the amplitude of reflected heating and probing radio waves and field structures at the vicinity of reflection point were calculated. They allowed us to interpret qualitatively the origin of spikes. The work is supported in part by Russian Foundation for Basic Research by the grant No. 06-02-17334.