



UA0500815

6-11**NONLINEAR INTERACTION OF
WAVES IN BEAM-PLASMA DISCHARGE**V.A. Buts, O.F. Kovpik, E.A. Kornilov*"NSC Kharkov Institute of Physics & Technology", Kharkov, Ukraine,**E-mail: kovpik@kipt.kharkov.ua*

The results of researches of excitation of oscillation by no relativistic electron beam in beam-plasma discharge with magnetic field are presented. The work is fulfilled in conditions of persisted increasing of beam power. It is shown, that the small scale low frequency ionic oscillations from the region of low hybrid resonance play the determining part in maintenance of beam-plasma discharge. Their excitation is conditioned by the nonlinear interaction of own high-frequency electronic plasma oscillation. Nonlinear interaction looks like the decay of high-frequency waves. Appearance of electromagnetic radiation from the beam-plasma discharge as short impulses, the stohastization of waves, the strong time expansion of energy spectrum of electrons of beam and stabilization of beam instability are caused by this nonlinear interaction.



UA0500816

6-12**CUMULATION AND ACCELERATION OF IONS
BY TW FEMTOSECOND LASER PULSE**Balakirev V.A., Dovbnya A.N., Egorov A. M., Zubrin S.Yu. Onishchenko I.N.,
Onishchenko N.I., Povrozin A.I., Pristupa V.I.*National Science Center "Kharkov Institute of Physics and Technology"**Academic St. 1, Kharkov 61108, Ukraine,**E-mail: onish@kipt.kharkov.ua*

The theoretical and numerical investigations of a new method of ions cumulation and acceleration in cone volume created in the focal region at focusing of powerful femtosecond laser pulse are presented. The cone volume is formed by delay in time of the central part of the being focused pulse. The cumulation degree and the maximum energy of accelerated ions in dependence on the values of powerful femtosecond laser pulse have been studied. The physical mechanisms of increase of ions density and energy in paraxial range of plasma have been discussed. The proposed method of ions cumulation and acceleration allows creating compact bright source of fast neutrons, media for X-ray and gamma-lasers, and also provides possibility of nuclear reactions initiation and isotopes producing.