

EXCITATION OF LF OSCILLATIONS  
AT THE INJECTION OF A RELATIVISTIC  
ELECTRON BEAM IN PLASMA

*V.A. Balakirev, N.I. Onishchenko, I.N. Onishchenko*

National Scientific Center  
“Kharkiv Institute of Physics and Technology”  
(1, Academichna Str., Kharkiv 61108, Ukraine;  
e-mail: *onish@kipt.kharkov.ua*)

S u m m a r y

The nonlinear process of excitation of radial low-frequency (LF) ion oscillations at the propagation of a relativistic electron beam (REB) in plasma with a given density profile is investigated. The nonlinear equation in the Lagrangian variables describing the radial oscillations of ions in the space charge field of the REB and in its own self-consistent electric field is obtained. The results of the numerical analysis of the indicated system of equations for a tubular REB and various transversal profiles of the plasma density are presented. Physical mechanisms of excitation and damping of LF ion oscillations are discussed.