

DYNAMICS OF A ONE-DIMENSIONAL ELECTRON  
BUNCH WITH INITIALLY RECTANGULAR  
DENSITY PROFILE INJECTED  
INTO HOMOGENEOUS PLASMA

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S u m m a r y

Dynamics of an electron bunch with initially rectangular density profile injected into plasma is studied in a 1D model using the PIC method. The dependences of the maximal beam density and the maximal amplitude of a wake wave field on the model parameters (plasma density and temperature, beam density, velocity, and duration) are obtained and interpreted. The deformation index as a qualitative characteristic of a deformation of the bunch initial density profile is proposed, and its dependence on the model parameters is studied.