

COMPUTATION OF OUTPUT PARAMETERS OF A SUBMICROSECOND ELECTRON ACCELERATOR*

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The development of complex systems computational models makes possible the evaluation of their various operation modes with minimal time and resources investment. Including the determination of the system operating parameters ranges, in which their characteristics correspond to the desired ones. This paper presents a submicrosecond electron accelerator computation made in the Multisim electrical process simulation program. The accelerator [1] is based on a high-voltage pulse generator according to the scheme of a high-voltage energy storage device, a pulse transformer, and a vacuum electron diode with an explosive emission cathode. The paper describes the applied methods and approaches of simulation development, the limitations and simplifications used, as well as the simulation error estimation. Based on the created computation, the output electrical parameters of the accelerator were analyzed depending on the amount of stored energy and the parameters of the diode system. The diode system model was verified in the previous studies [2]. The obtained research results can be used in the development of new exemplars of high-voltage pulse technology and for tuning existing accelerators.

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