

Simulation of Beam Performances of the Two-Cell RF Gun, V.A. KUSHNIR, V.V. MITROCHENKO, National Science Center, Kharkov Institute of Physics & Technology (KFTI) - The two-cell microwave gun has been installed to inject the beam directly to the backward wave accelerating structure at the LIC facility. Design of the gun allows to change widely the relation of maximum electric field amplitudes in the cavities (η). Simulated dependencies of beam performances at the structure entrance as a function of both η and the maximum amplitude of on axis electric field are presented. It was shown that the optimal formation of the bunches can be reached both for the thermoemission and the continuous photoemission regimes of the gun by choosing the needed η value. The normalised rms emittance of the beam equal to 9π mm·mrad and pulse power of the back bombarding two times less than that for a single cell rf gun with the same output energy and current were predicted for the thermoemission case. The nearly linear phase energy distribution of the electrons can be obtained under the certain conditions so that a α -magnet can be used to increase the micropulse current. Beam performances for the picosecond photoemission case are discussed.