عنوان مقاله:

Numerical computing of axial potential distribution in accelerator lens immersed in the field of two electrodes and 300 keV electron accelerator column designing

محل انتشار:

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خلاصه مقاله:

Electrons electrostatic accelerator column is one of essential parts of electrostatic accelerators. Geometric shape designing must be such as applying a voltage to the electrodes, the potential gradient and potential levels in addition to accelerating the particle beam to the desired energy, focus the beam and energy distribution of accelerated particles may be broadening. Electrodes immersed in the field geometry around the central page, are perpendicular to the optical axis. Different models, such as linear model, analytical model, two cylindrical lenses model, polynomial lenses model have been introduced for axial potential distribution of this system. In this article series expansions in terms of Bessel functions are used to obtain axial potential distribution of electrodes of accelerator immersed in the two electrodes field and by solving the final equation in the least squares method, compared with the above models. Finally, by using the Studio CST software and information that have gained from central potential distribution, an electron accelerator Column that has an optimal energy distribution and output radius is designed and simulated.

کلمات کلیدی:

Accelerator tube, Lenses immersed in the field, axial potential distribution, electrode