

1014-78-1216

S. M. Makky* (sadia_makky@owens.edu), 2635 Broadway, # 14, Toledo, OH 43609, and **A. K. Ahmad** and **S. M. Juma**. *Design of a two-electrode electrostatic lens for optimum aberation characteristics.*

Inverse problem approach is used for the design of two, and three-electrode electrostatic lenses, for operation at infinite and zero magnification. For a preassigned trajectory of charged-particle beam, the electrostatic potential and field distribution, on the optical axis, are determined by solving the paraaxial-ray equation. From the knowledge of the potential and its first and second derivatives the optical properties are computed. Furthermore, the electrode shape is determined from the solution of Laplace equation. It appears that for a preassigned charged particle beam trajectory, and by solving a Laplace equation, it is possible to optimize the electrodes configurations of an electrostatic lens with the lowest possible aberration coefficients. The results also indicate that the geometry of the electrodes of such a lens can be practically realized. (Received September 27, 2005)