Theoretical Study to calculate some parameters of Ion Optical System

*Bushra Joudah Hussein

*Department of Physics/ College of Education for Pure Science (Ibn Al-Haitham)/University of Baghdad, Iraq

Abstract: In this study Matlab program build to study the effect of main parameter of quadrupole magnet lens. The study included theoretical analysis using matrices representation to calculate the focal length, lens power, effective length and displacement (the bandwidth envelope) for Horizontal and Vertical plane. Results showed the increasing in effective length caused decreasing in focal length of the system for horizontal and vertical plane, the opposite action appeared with lens power. Furthermore the increasing in effective length caused decreasing in Horizontal displacement (beam envelope) for horizontal plane, the opposite action appeared for vertical plane.

Key Words : Ion Optical, Focusing lenses, Quadrupole Magnet, Magnetic lens.

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