

Abstract Submitted  
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**Electrostatic Confinement of Charged Particle Beams** JOSE PACHECO, DUNCAN WEATHERS, CARLOS ORDONEZ, University of North Texas — Many experiments rely on the confinement of charged particles. Examples of these experiments range from fusion studies to antiproton-positron studies for antihydrogen production. Researchers have already developed a variety of techniques for controlling and trapping charged particles. Examples of systems devised for such purposes include electrostatic traps in the form of a cavity [1],[2] or in the form of a storage ring like ELISA [3]. For this project, we are pursuing a different approach [4], which relies on a purely electrostatic environment for ion confinement. This system consists of a periodic electrode configuration of cylindrical symmetry that acts to confine an ion beam in the radial direction. In this manner, it is expected that long particle lifetimes inside the trap will be achieved, and that the system will have an inherent scalability to different ion energy. Results obtained from simulation of the proposed system will be presented and discussed along with a brief overview of the steps taken to develop a laboratory prototype. [1] M. Dahan et al., Rev. Sci. Instr. 69 (1998) 76. [2] H. F. Krause et al., American Institute of Physics. CAARI 16<sup>th</sup> Int'l Conf. (2001). [3] S.P. Moller et al., Proc. of the 1997 Particle Accelerator Conference. vol 1. pp 1027-1029. Vancouver, Canada. May 1997. [4] J.R. Correa et al., Nucl. Instr. and Meth. In Phys. Res. B 241 (2005) 909-912.

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