

MULTIPLE POTENTIAL WELL STRUCTURE IN INERTIAL ELECTROSTATIC CONFINEMENT DEVICES

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ABSTRACT

Inertial Electrostatic Confinement (IEC) devices are of interest as neutron generators for many applications. An essential part of these devices is the formation of a multiple potential well structure within the devices. In this paper, previous analyses of the formation of these wells are reviewed and extended. Three types of IEC systems are classified and analyzed according to the arrangement of electrodes and the species within the system. These systems are the uni-polar cathode-anode (UCA) system, the bi-polar cathode-anode (BCA) system, and the bi-polar anode-cathode (BAC) system. Results of extensive parametric studies are reported through an efficient solution of the Poisson's equation. These results delineate the conditions most conducive for double potential well formation in different systems and may aid in the future design of IEC systems.