

Public Abstract

Ryan Meyer

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Nuclear Engineering

Multiple Potential Well Structure in Inertial Electrostatic Confinement Devices

Advisors: Dr. Mark Prelas

Dr. Sudarshan Loyalka

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Inertial Electrostatic Confinement (IEC) devices have many potential applications such as the production of medical isotopes, oil well logging, detection of explosives, forensics, etc. Such a device is typically spherical or cylindrical in nature. Here, fusion reactions are created in the device through the use of high voltage. IEC performance depends greatly on the shape of the voltage distribution along the radius of the device. In this work, computations are performed to determine the shape of the voltage distribution for different IEC devices. The results indicate that the type of voltage distribution needed for favorable IEC performance is indeed created, which supports the results of some existing models. Thus, the computations performed may help guide future theoretical and experimental IEC research. Successful implementation of IEC devices in the applications listed above, and possible others, could improve the quality of life for people around the globe.