

# Seminar

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## Institute for Plasma Research

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**Title :** Overview of Inertial Electrostatic Confinement  
Fusion Research Activities at CPP-IPR

**Speaker:** Dr. S R Mohanty  
CPP-IPR

**Date :** 31<sup>st</sup> May 2022 (Tuesday)

**Time :** 03.30 PM

**Venue :** Online - Join the talk:  
<https://meet.google.com/mpy-rnep-crj>

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### **Abstract :**

Inertial Electrostatic Confinement (IEC) is a distinctive approach for confining the ions in converging electrostatic fields for fusion purposes. The devices based on this concept offer many potential advantages, including simplicity in design, simplified support structures, cost-effectiveness and the ability to be used with a variety of fusion fuels. Further, it's capability to provide a relatively high fusion rate in a small volume prompt researchers to use such devices for a number of near-term applications in the area of land mine detection, neutron radiography, clandestine material detection at the air- and sea- ports, medical isotope production, plasma space propulsion and tunable x-ray sources. The device mainly comprises of a concentric coaxial cylindrical/spherical grid assembly housed inside a cylindrical/spherical vacuum chamber, a gas injection system, a high voltage feedthru and a high voltage negative polarity power supply. On application of the high negative potential of few tens of kV to the inner grid of the device, the ions oscillate around the central grid and would overcome the coulomb barrier. Thus they fuse together to produce neutrons of the order  $10^8$  n/s. Realizing the importance of possible applications of IEC device in different areas, CPP-IPR started a program to build IEC fusion devices in XII plan. This talk will provide a glimpse of the fundamentals and applications of IEC research along with it's present status.

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