Seminar

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Institute for Plasma Research

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Title: Bridging Fusion Initiatives Using Linear Plasma Device

Speaker: Dr. Shantanu Kumar Karkari
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Date: 19th March 2026 (Thursday)

Time: 10:30 AM

Venue: Seminar Hall, IPR

Join the talk online: URL: https://bharatvc.nic.in/viewer/5992138016

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Abstract

The recent essay, "Igniting India's Fusion Future," presents a roadmap for aligning India's fusion program with the objective of establishing a fusion power plant by 2060, while highlighting the critical hurdles that must be addressed to attain this aim. This projection bring into line with the progress of magnetically confined fusion reactors globally, notably the International Thermonuclear Experimental Reactor (ITER), of which India is a partner. To match with the rapid developments, there is a need to strategize our focus to crucial research and development sector backed by creation of intellectual work force that will be needed to support and sustain such mammoth projects in the upcoming years. To this end IPR has made noticeable contributions in plasma science and technologies related to fusion research. While the new tokamaks are still proposed to be build, it is a high time to consolidate our focus on the burning issues that are already known to be impediment in steady-state plasmas operations, safety and critical technologies. In this context linear plasma systems can prove to be a game changer by providing an alternative test bed for the physics and engineering validations including testing of advanced materials for plasma facing components, to volume neutron source utilizing NBI and RF heating systems, superconducting magnets for plasma confinement, plasma systems stability and controls etc., which are also common to tokamaks.

This overview talk will examine some of the unresolved challenges in Fusion Energy Research and what could be rapidly adopted to bridge the gaps using indigenous resources. In this context, the role of plasma physics experiments within laboratory setups both at IPR and CPP shall be highly valuable. Finally a brief roadmap on linear plasma device program, consistent with these objectives shall be presented.

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