

# Seminar

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## Institute for Plasma Research

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**Title :** Study of novel features in dense magnetised plasma

**Speaker:** Dr. Atul Kumar

Institute for Plasma Research, Gandhinagar

**Date :** 7th January 2020 (Tuesday)

**Time :** 10:30 AM

**Venue :** Committee Room 4, (New Building), IPR

### **Abstract :**

Magnetic field pervades our entire known universe and fundamentally modifies the transport properties of the charged particles therein. With the recent realisation of tens-kilotesla magnetic fields, laser and/or EM wave propagation in highly magnetised high-density plasmas has become of practical interest, especially for heating plasmas to high energy density and igniting fusion targets. In this talk, various physics aspects of laser generated energetic charged particles (e.g. electrons and ions) dynamics in magnetised plasmas will be discussed. In particular, a detailed study on the enhancement of  $\mathbf{J} \times \mathbf{B}$  acceleration and electron heating in plasma in presence of magnetic field has been carried out using Particle-in-Cell (PIC) simulations under OSIRIS-4.0 framework. Secondly, the nature of fore-wake excitations created by a charged object moving in a magnetised plasma is also investigated using PIC simulations.

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