

Seminar

Institute for Plasma Research

Title : On first observation of multiple current free potential structures in HeX device at IPR

Speaker : Mr. Soumen Ghosh

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Date : 30th November 2016 (Wednesday)

Time : 04.00 PM

Venue : Committee Room 3, (New Building), IPR

Abstract:

The formation of multiple axial potential structure (MAPS) and downstream annular plasmas have been analyzed in terms of their dependency on the relative positions of magnetic and geometric apertures in expanding helicon plasma of HeX device. Tailoring the magnetic field configuration leads to formation of multiple double layers. This transition to MAPS is created by forming a cusp magnetic field at the downstream after the expansion throat, which facilitates axial density gradients sufficient enough for the formation of two distinct potential drops. The downstream annular plasma formation is found to be irrespective of the relative position of the geometric aperture or the presence of a radial electric field. Further investigation revealed that grad-B drifts play an important role in the formation of hollow density profiles. Both the results of MAPS and downstream annular plasma formation will be presented in this presentation. Moreover, some preliminary results on electron temperature and density measurements in GDC plasmas in Aditya-U will also be presented. Furthermore a brief description of system setup for detecting Ar⁺ emission line fluctuations (in low temperature filament plasma) using emission spectroscopy. Detection of fluctuations of the individual ions (He⁺ and Ar⁺) in two positive ion species plasma are planned via this technique.
