Design and development of electronic circuits for plasma probe diagnostics and measurements

Abstract

Plasma probes are important components of plasma diagnostics which are generally installed in the plasma vessel, with electronic circuits outside, to measure the various parameters like plasma density, temperature, fields etc. Plasma potential fluctuations are induced by the oscillating fields, often, in its boundary. It is found more significant in case of RF based plasma source, where large fluctuation in term of electric potential may be noticed.
This project aims at design and development a RF compensated probe and electronics. RF probe is mainly designed for filtering undue fluctuations and measuring probe current required for the estimation of various plasma parameters like plasma density, temperature, fields etc. Proposed work will include developing the following,
• Electronics for probe and its testing and validation using lab tests.
• Complete integration of probe electronics with probe head.
• Testing and validation of developed probe on the plasma apparatus.
The student will get benefit with various skills like electronic, testing and measurements techniques, plasma science, and its applications.

Academic Project Requirements:

1) Required No. of student(s) for academic project: 1

2) Name of course with branch/discipline: M.E./M.Tech Electronics and Instrumentation Engineering

3) Academic Project duration:

(a) Total academic project duration: 52 Weeks
(b) Student's presence at IPR for academic project work: 5 Full working Days per week

Email to: shekar.t@ipr.res.in[Guide's e-mail address] and
project_ece@ipr.res.in [Academic Project Coordinator's e-mail address]

Phone Number: 079 -2105 [Guide's phone number]