Signal Processing and Modelling of Radio-Frequency Sensing Device for Application in Complex Plasma Loads

Abstract

This project focuses on the development and calibration of a voltage current (V-I) sensing and analysis framework for complex electrical and plasma loads. The intern will work on advanced signal processing to remove noise, analyze harmonic content using FFT, and reconstruct waveforms for accurate phase estimation from the voltage and current data. The work includes parameter fitting to experimental data. In later stages, the project extends to capacitive plasma systems, plasma load modeling, and correlation of external V-I measurements with plasma parameters such as density, temperature, and EEDF. The internship offers hands-on experience in data analysis, signal processing, simulations, and plasma diagnostics, with exposure to real-time plasma control applications.

Academic Project Requirements:

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

2) Name of course with branch/discipline: B.E./B.Tech. Computer Engineering/IT/MCA

3) Academic Project duration:

(a) Total academic project duration: 15 Weeks
(b) Student's presence at IPR for academic project work: 2 Full working Days per week

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