Annexure-I

Design, fabrication and characterize of a pair of Helmholtz coils to produce uniform magnetic field

1. Background of the problem

Magnetic fields are essential to study different physical phenomenon happening inside plasma. In the present work, a uniform axial magnetic field is required to control the magnetization parameter in a capacitive coupled plasma device. A pair of circular coils carrying conductor placed in a special configuration can produce uniform axial magnetic field. The electric DC current flowing through the coil can be varied to control the magnitude of the magnetic field.

2. Scope of work

The student would learn different magnetic coil configuration used in experimental devices. He/she will generate routines to optimize coil winding configurations, coil currents and positions to find the required magnetic field in the given geometry. Coils would be wound around armatures and test set up to measure magnetic field would be made and compared with calculation.

3. Academic gain of the student

Matlab / Python program, winding techniques of loop coils, making experimental test set up and measurement of field by Gauss meter would be learnt by the student.

Eligibility: Only students of Electrical Engineering branches can submit their application at

Email: kmishra@ipr.res.in [Guide e-mail address] and project_ee@ipr.res.in [Project Coordinator's e-mail address]

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