

Solenoid Module addition, BETA mag. Field calculations and GUI interfacing of CAE v1.1 code

Abstract

Introduction:

A Code for magnetic field due to Arbitrary Electromagnets (CAE) v1.1 is a proprietary code developed by Institute for Plasma Research for calculating magnetic fields due to arbitrary electromagnet. It's specifically designed to handle the magnetic field calculations for various tokamak configurations, including the SST-1, ADITYA-U, and BETA tokamaks. This code uses analytical and numerical methods based on the Biot-Savart law to determine the magnetic field, and it can be used to visualize the magnetic field in 3D plots.

Proposed Work:

The work includes modifying the code using the latest Python GUI modules, Microsoft Excel input and output features, and generating magnetic fields of the modified BETA machine of IPR. Develop a module related to solenoid-type electromagnets for the existing code. Students collect the data related to electromagnets of the BETA machine, their geometry, and convert the data into suitable input files for the code, and run the code for field calculations. Students also write analytical and numeric code for the Solenoid and incorporate it into the code.

Academic Project Requirements:

- 1) Required No. of student(s) for academic project: 3**
- 2) Name of course with branch/discipline: B.E./B.Tech. Computer Engineering/IT/MCA**
- 3) Academic Project duration:**
 - (a) Total academic project duration: 6 Weeks**
 - (b) Student's presence at IPR for academic project work: 3 Full working Days per week**

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