Seminar

Institute for Plasma Research

Title : Design & simulation studies of normal conductors and superconductors based novel compact plasma sources & devices

Speaker: Dr. Subrata Jana
Institute for Plasma Research, Gandhinagar

Date : 27th November 2018 (Tuesday)

Time : 10.30 AM

Venue : Committee Room 4, (New Building), IPR

Abstract :

High temperature superconductivity brought out new hopes and possibilities of the usage of superconductors in a very broad spectrum of applications i.e. MRI, SMES, high voltage DC transmission lines and to fusion relevant magnet system design. In addition, Compact plasma based devices with HTS have an extremely large spectrum of applications in various fields of sciences and engineering. The design and characterizations of high field magnet using HTS are ongoing subject of interest and application specific in various cases. So it is essential to consider phenomena such as (a) electromagnetic and eddy current modelling (b) Static and dynamic force-equilibriums modelling (c) modelling of stored energies and energy conversion efficiencies etc.

This study istargeted to design and compute the coil parameters for homogeneous high magnetic field (for example a 3.0T magnet should have a homogeneity of <5 ppm over a 50 cm DSV) by solving inverse method, elliptic integrals and use of different optimization technique. In this work a design and simulation study of normal conductors and superconductors has been described in few applications with some initial results.