Effect of different currents on the secondary loop voltage of a Tokamak

Abstract

The nature of plasma formation in a tokamak plays a crucial role in the evolution and quality of plasma. The inductive start-up, in which an initial loop voltage initiate and a lower value of it drives the current, is one of the most promising and well-established techniques for plasma start-up. The loop voltage is generated using the transformer action, in which a high current is changed through a primary circuit and a voltage in the secondary coil (plasma acts as secondary) is induced. During the plasma initiation phase, current drive through several other coils are started as well and magnetic field topology gets impacted by all of these due to their superposition. The major impacting magnetic fields include the vertical and radial magnetic fields for the horizontal and vertical equilibrium respectively. The present study will to subjected address the direct impact of these field on the loop voltage – both at the initiation and flat-top phase of plasma. Hence, the impact of negative voltage at the measured loop voltage in the plasma disruption phase will be explored.
Students from the aerospace engineering/software engineering will be preferred.

Academic Project Requirements:

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

2) Name of course with branch/discipline: B.E./B.Tech. Other

3) Academic Project duration:

(a) Total academic project duration: 26 Weeks
(b) Student's presence at IPR for academic project work: 1 Full working Days per week

Email to: suman.aich@ipr.res.in[Guide's e-mail address] and
project_other@ipr.res.in [Academic Project Coordinator's e-mail address]

Phone Number: 079 -079-23962248 [Guide's phone number]