

Seminar

Institute for Plasma Research

Title : A Method for Non-intrusive Position Sensing
using Multiple Mutually Coupled Planar Coils

Speaker: Dr. Sandra KR

Indian Institute of Technology, Chennai

Date : 18th February 2022 (Friday)

Time : 03.30 PM

Venue : Online - Join the talk:

https://meet.ipr.res.in/Dr.SandraKR_PDFTalk

Abstract :

Position sensing has a wide variety of industrial and automobile applications. While there are different types of sensors to measure linear displacement, magnetic field-based sensors are the most suitable for non-contact measurement, especially for harsh industrial environments. Though there are magnetic sensors developed for position measurement, there is demand for improvement in terms of their design, manufacturability, and ease of operation. A new configuration of mutually coupled planar coils that enable non-intrusive sensing of the position of an object will be presented in this talk. The proposed configuration is used to design a sensor system to measure the liquid level in a sealed container. The range of the sensor is easily extendable. A suitable readout scheme developed to measure the mutual inductances and to compute the final output that is proportional to the liquid level will be presented. The input-output characteristic of the prototype unit developed to evaluate the practicality of the approach is linear, which is one of the most preferred attributes of any position sensor. The effect of various non-idealities and environmental factors is negligible for the required range. The details of the new configuration, measurement scheme, prototype development, evaluation, and limitations will be presented in the talk.
