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# Seminar

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## Institute for Plasma Research

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**Title :** Design and Implementation of Printed Ultra-Wide Band MIMO Antenna for Wireless Communication Application

**Speaker:** Dr. Rohit Mathur  
IIT, Dhanbad

**Date :** 26th March 2021 (Friday)

**Time :** 03:30 PM

**Venue :** Online - Join the talk:

[https://meet.ipr.res.in/Dr.RohitMathur\\_PDFtalk](https://meet.ipr.res.in/Dr.RohitMathur_PDFtalk)

### Abstract :

Ultra-wideband (UWB) Multiple-Input-Multiple-Output (MIMO) technology is rapidly developing as a potential solution for wireless personal area network (WPAN) since the use of license-free 7.5 GHz bandwidth (from 3.1 GHz to 10.6 GHz) for ultra-wideband (UWB) as per the Federal Communications Commission (FCC). By using multiple antennas, the performance of system improves tremendously. As is the case in short-range wireless communication systems, an antenna plays a vital role in UWB systems. However, there are more challenges in designing a planar UWB-MIMO antenna than a conventional antenna. A suitable UWB-MIMO antenna should be capable of operating over an ultra-wideband as allocated by the FCC. At the same time, satisfactory radiation properties over the entire frequency range within a compact size are also necessary. Another primary requirement of the UWB-MIMO antenna is high port isolation with superior diversity performance i.e. low Envelop correlation coefficient, good diversity gain and mean effective gain, etc.

This presentation focuses on design, analysis and implementation of UWB-MIMO antenna. In this presentation several techniques to achieve ultrawide bandwidth and high port isolation of the UWB-MIMO antenna will be discussed. For all the antennas presented, first the performance and characteristics are studied using standard numerical simulation tools like CST mw studio. Then, simulated designs are fabricated and validated by measurement.

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