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# Seminar

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## Institute for Plasma Research

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**Title :** High-Power Microwave / Millimeter wave  
Vacuum Electron Tubes and Passive  
Components

**Speaker:** Dr. Akash  
IIT BHU, Varanasi

**Date :** 28th January 2022 (Friday)

**Time :** 03.30 PM

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

[https://meet.ipr.res.in/Dr.Akash\\_PDFTalk](https://meet.ipr.res.in/Dr.Akash_PDFTalk)

### **Abstract :**

In this presentation, I will present my research work carried out during my Ph.D. at IIT (BHU), Varanasi as well as at SAMEER, R&D research center as a senior research scientist (on contractual project).

First, I will discuss about millimeter wave vacuum electron devices specially gyrotron amplifiers for advance radar and communication system. The gyro-TWT is a vacuum electron amplifier based on the principle of the relativistic electron cyclotron maser. It is an amplifier variant of gyrotron family which amplify the low power EM wave to high-power (kW levels) EM wave over the broad frequency range in microwave/ millimeter wave regime. I will present my best three publications on W-band gyro-TWT amplifier published during my Ph.D. in which I have basically done the design and simulation study of gyro-TWT including, electron gun, input couplers, RF interaction structure, beam collector and RF output window.

Later, I will discuss my post Ph.D. research work at SAMEER Guwahati. I am working here on the design and development of highpower vacuum tubes and passive components for Medical Linear Accelerator (LINAC) system. The LINAC is high-power microwave system and used for treatment of cancer using Radiation therapy. It consists of microwave tube components such as electron gun, highpower source (Magnetron or Klystron) to accelerate the electron beam in accelerating cavities and various other passive components I will present my work on the design, development of passive components i.e., RF Loads and Circulators for LINAC system.

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