

# Sherpur Polytechnic Institute

## Bhatshala , Sherpur

Subject Name : MICROWAVE RADAR AND NAVIGATION AIDS

Subject Code : 26871

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## WHAT IS MICROWAVE?

- Electromagnetic waves with frequencies ranging from 3 GHz to 300 GHz.
- Wavelength is in the order of 10 cm to 1mm – something in between light waves and radio waves. So, it is also known as millimeter waves.

- Term “micro” refers to the tinyness of the wavelength.

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- Because of high frequency and short wavelength phase changes continuously w.r.t time.

## WHAT IS MICROWAVE? (CONTINUE)

- Microwave frequency bands

<b>Band</b>	<b>Frequency range</b>
VHF Band	30 to 300 MHz
UHF Band	300 to 1000 MHz
L Band	1 to 2 GHz
S Band	2 to 4 GHz
C Band	4 to 8 GHz
X Band	8 to 12 GHz
Ku Band	12 to 18 GHz
K Band	18 to 27 GHz
Ka Band	27 to 40 GHz
V Band	40 to 75 GHz
W Band	75 to 110 GHz
mm Band	110 to 300 GHz

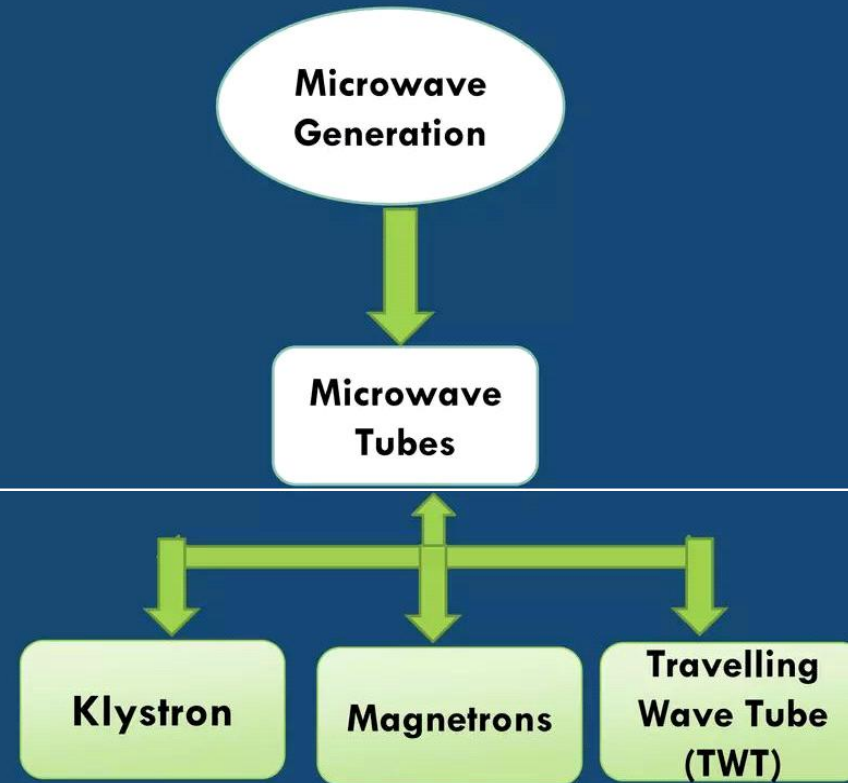
# MICROWAVE GENERATION & TRANSMISSION

## MICROWAVE GENERATION

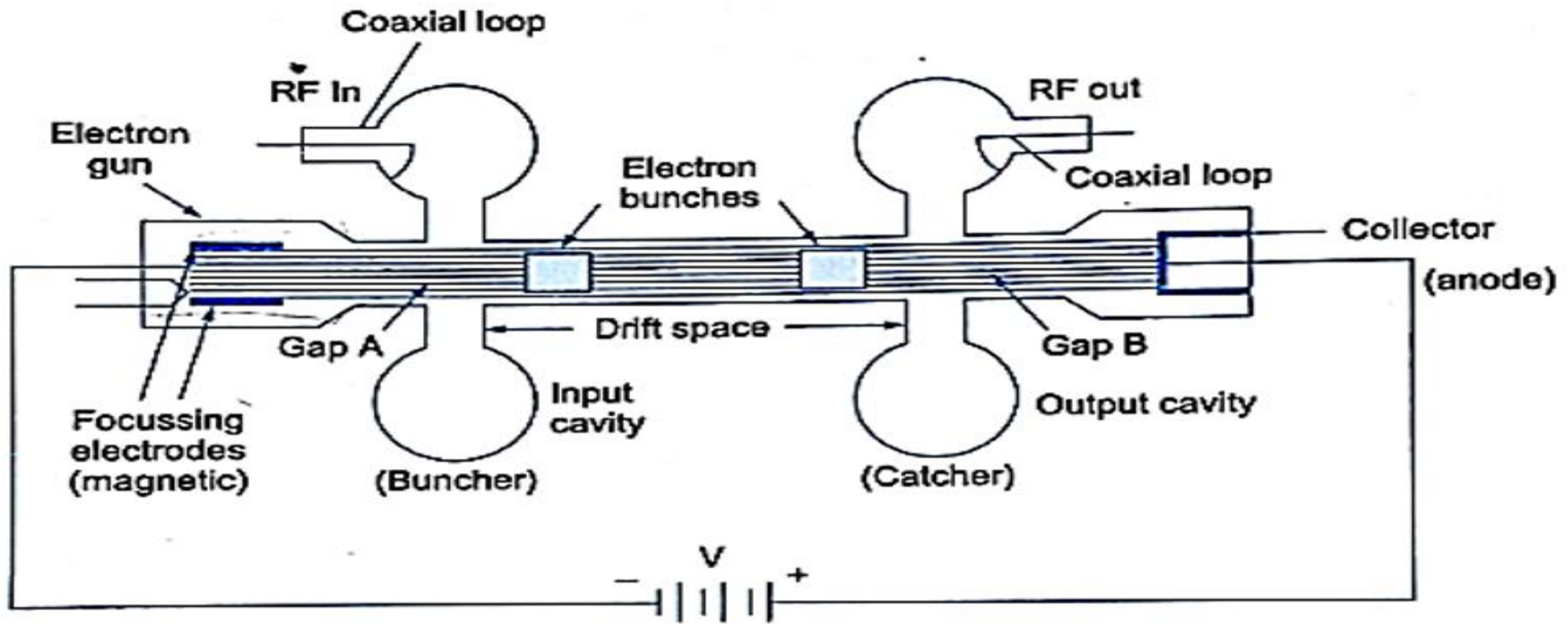
- The operation of conventional vacuum tubes and solid state devices is limited by *transit time* , *Inter-electrode capacitance* and *lead inductance* e//ecfs.
- Thus, the development of *new devices* was essential to exploit the microwave frequency region.
- Fortunately, numbers of new principle of operations, such as , **velocity modulation**, **interaction of electrons with electromagnetic fields**, **transferred electron techniques** etc have enabled the generation of microwaves.

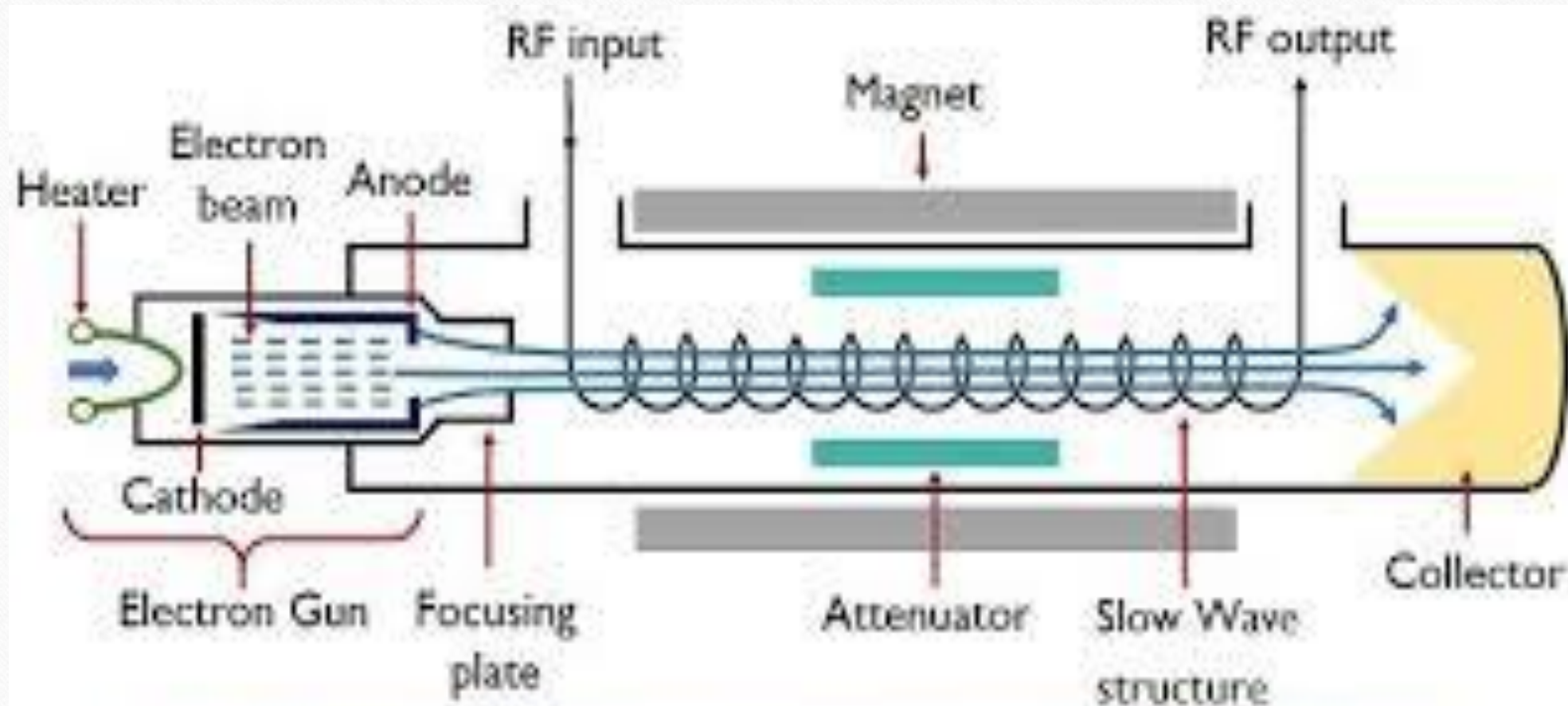
# MICROWAVE GENERATION & TRANSMISSION (CONT.)

## MICROWAVE GENERATION (cont..)



## 2 cavity klystron tube





**Constructional Structure of Travelling Wave Tube**



**THANK YOU!**