SNS COLLEGE OF ENGINEERING

Kurumbapalayam (Po), Coimbatore – 641 107

An Autonomous Institution

Accredited by NBA – AICTE and Accredited by NAAC – UGC with 'A' Grade
Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

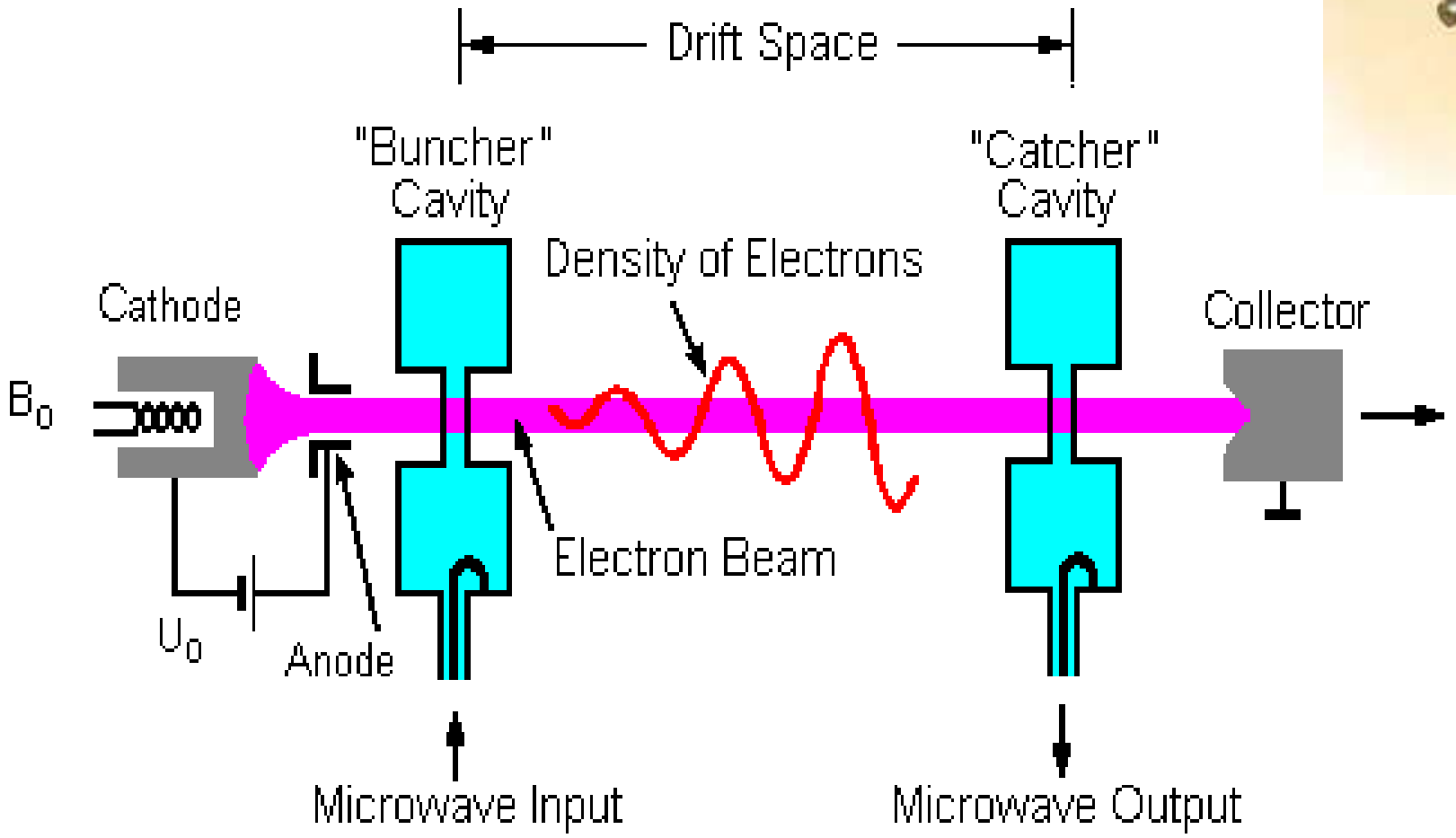
COURSE NAME : 19EC602 – Microwave and Optical Engineering

III YEAR / VI SEMESTER

Unit I- MICROWAVE ACTIVE DEVICES

Topic : Two cavity klystron amplifier

Two Cavity Klystron Amplifier



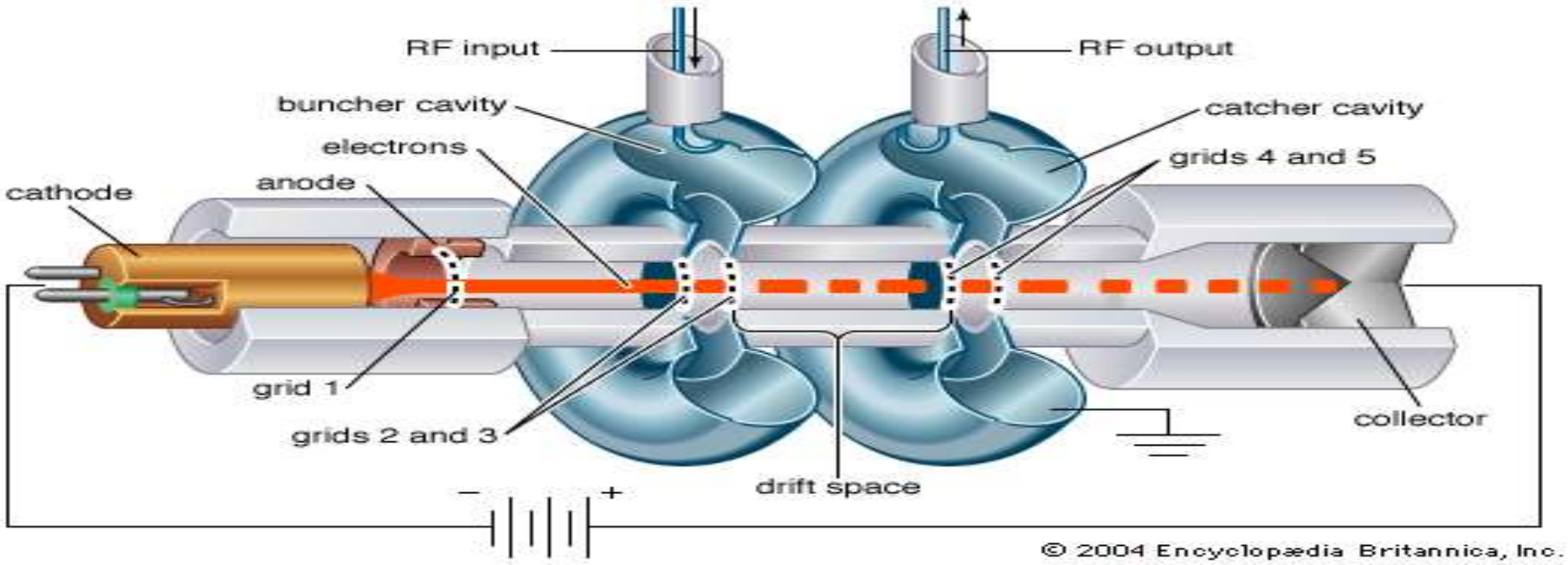
Principle

Velocity modulated tube

High velocity electron beam is generated by an electron gun and sent down along a gas tube through an input cavity (BUNCHER), drift space (FIELD FREE) and an output cavity (CATCHER) to a collector electrode anode.

The anode is kept positive to receive the electrons, while the output is taken from the tube via resonant cavities with the aid of coupling loops

Two grids of the buncher cavity are separated by a small gap A while the two grids of the catcher cavity are separated by a small gap B.

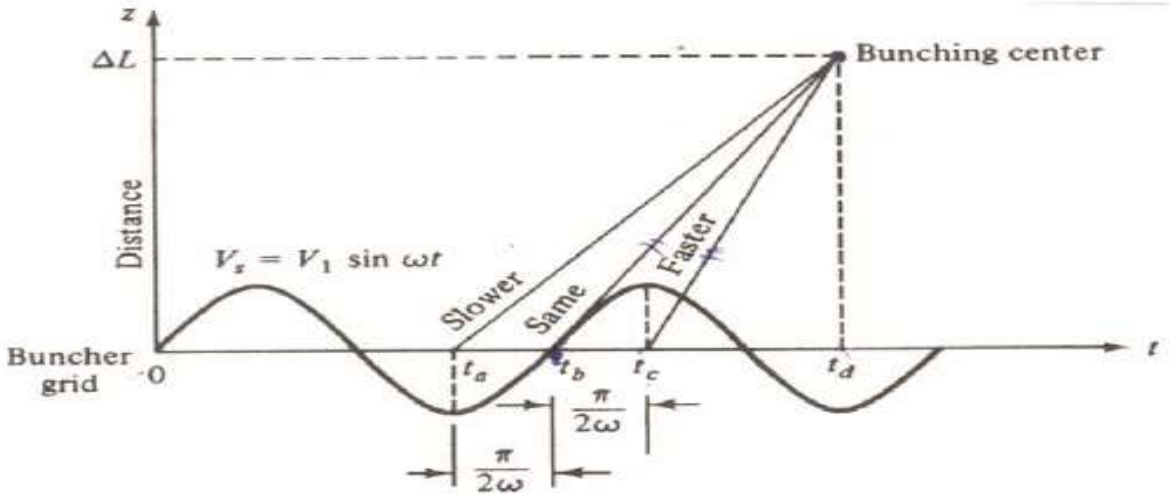


OPERATION

The input buncher cavity is exited by the RF signal, (the signal to be amplified) which will produce an alternating voltage of signal frequency across the gap A.

This voltage generated at the gap A is responsible to produce bunching of electrons or velocity modulation of the electron beam.

Applegate Diagram



- Velocity of electron „b‟ = $v_b = v_0$(field zero)
- Velocity of electron „a‟ = $v_a < v_0 = v_{min}$(-ve field)
- Velocity of electron „c‟ = $v_c > v_0 = v_0 = v_{max}$ (+ve field)

Any Query????

Thank you……