



C.V. RAMAN WITH HIS MODEL OF THE SPECTROGRAPH AT IISC

SIR CHANDRASEKHARA VENKATA RAMAN
(Nov 7, 1888 – Nov 21, 1970)

The true wealth of a Nation consists not in the stored-up gold in its coffers and the banks, not in the factories, but in the intellectual and physical strength of its men, women and children

"But..look here,Krishnan," he said turning to the young man,"if this Compton Effect is true of X-Rays,it must be true of light too".

C.V. Raman

Sir C V Raman became the first Indian director of IISc in 1933. He also started the company "Travancore Chemical and Manufacturing Co. Ltd." in 1943

The millimeter-wave communications experiment by J.C. Bose and the molecular scattering of light discovered by C.V. Raman are recognized as first IEEE milestones in India.



Raman Effect in 1928-The optical analogue of the Compton effect.

Ground-breaking work in the field of light scattering,
→ [Nobel Prize for Physics](#) in 1930

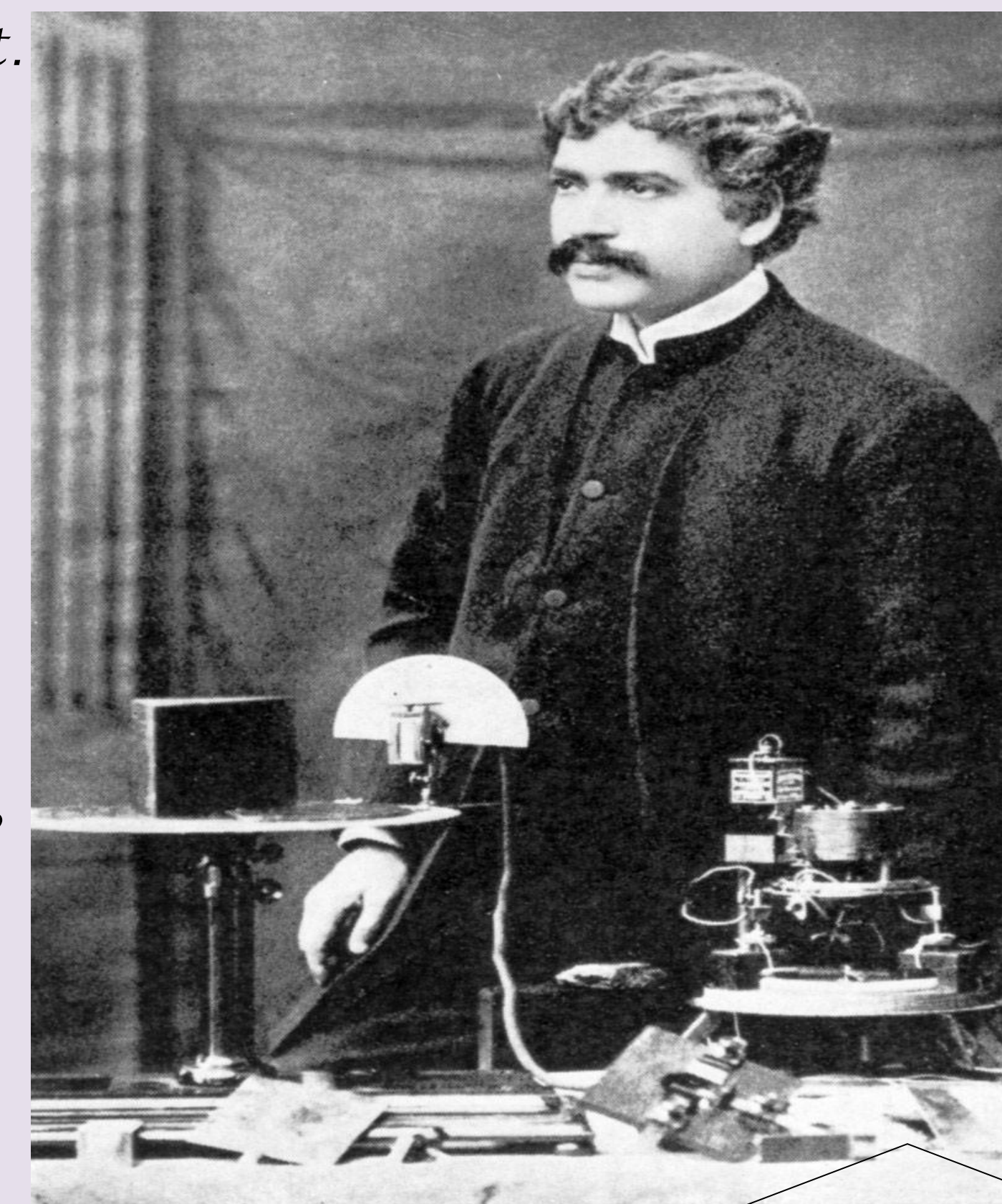
- ❖ Why is the sea blue?(1921)
- ❖ Raman-Nath theory(1934-1936)
- ❖ Studies on Brillouin Scattering(1933-40)
- ❖ Discovery of Soft mode
- ❖ Crystal Dynamics
- ❖ Diffraction of light by acoustic waves
- ❖ Physiology of colour & vision

How do we use Raman effect at ECE?

- Optical amplifiers using Stimulated Raman scattering effect
- Raman spectroscopy sensors for bio-chemical sensing
- Coherent Raman microscopy



Bose developed entire millimeter-wave components such as: a spark transmitter, coherer, dielectric lens, polarizer, horn antenna and cylindrical diffraction grating.



The true laboratory is the mind, where behind illusions we uncover the laws of truth

SIR JAGADISH CHANDRA BOSE (NOV 30, 1858 – NOV 23, 1937)
JAGADISH CHANDRA BOSE WITH HIS MICROWAVE APPARATUS IN 1897

Sir Nevill Mott remarked that

"J.C. Bose was at least 60 years ahead of his time. In fact, he had anticipated the existence of P-type and N-type semiconductors."

Research in RF & Microwaves at ECE

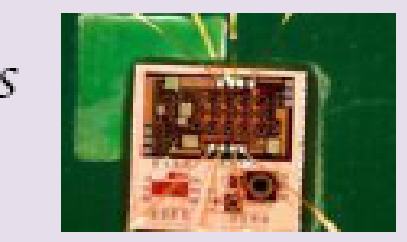
Wireless Power Transfer



Antenna Design

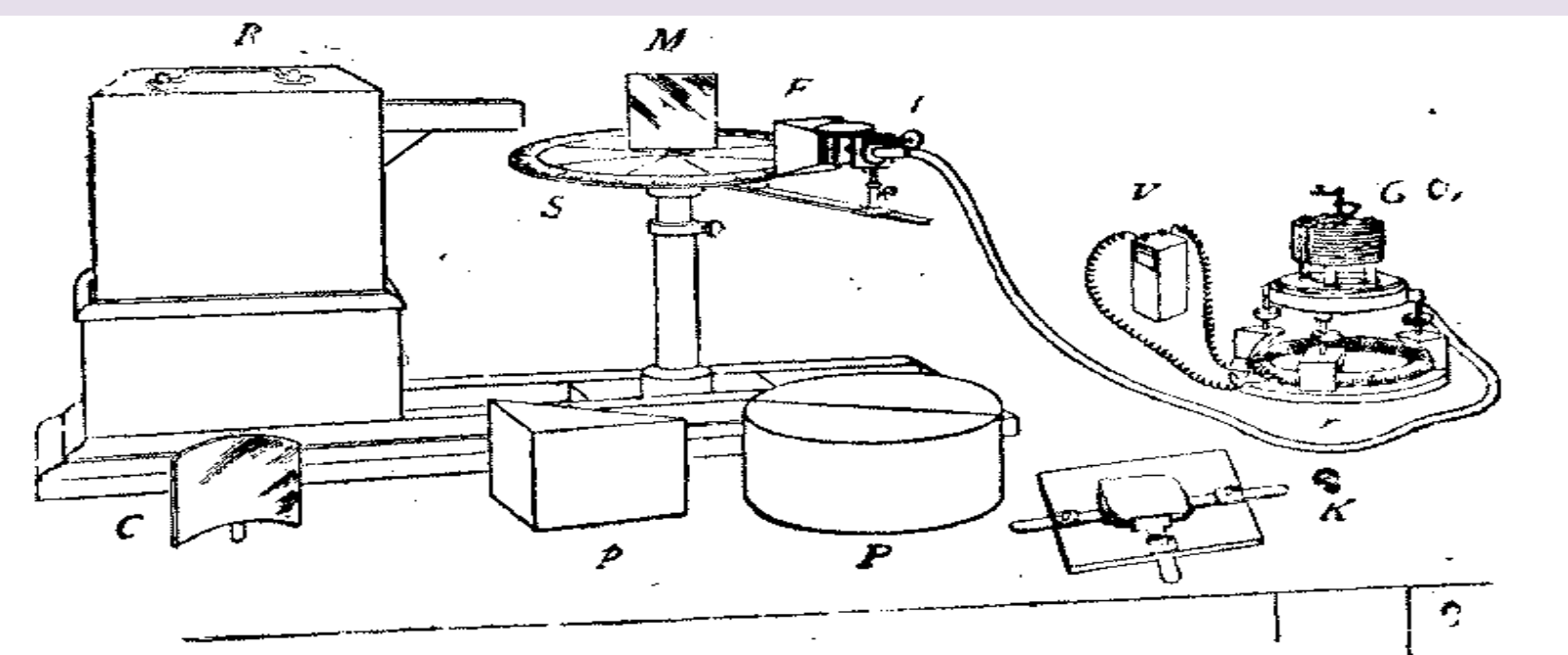


RF & Microwave Circuits



Computational EM

Diagram of microwave receiver & transmitter apparatus from Bose's 1897 paper.



R, radiator; S, spectrometer-circle; M, plane mirror; C, cylindrical mirror; p, totally reflecting prism; P, semi-cylinders; K, crystal-holder; F, collecting funnel attached to the spiral spring receiver; t, tangent screw, by which the receiver is rotated; V, voltaic cell; r, circular rheostat; G, galvanometer.

"The invisible light can pass through brick walls, buildings etc. Therefore, messages can be transmitted by means of it without wires."
– Millimeter-wave communication experiment (1894-1896)

