ASET Forum of TIFR

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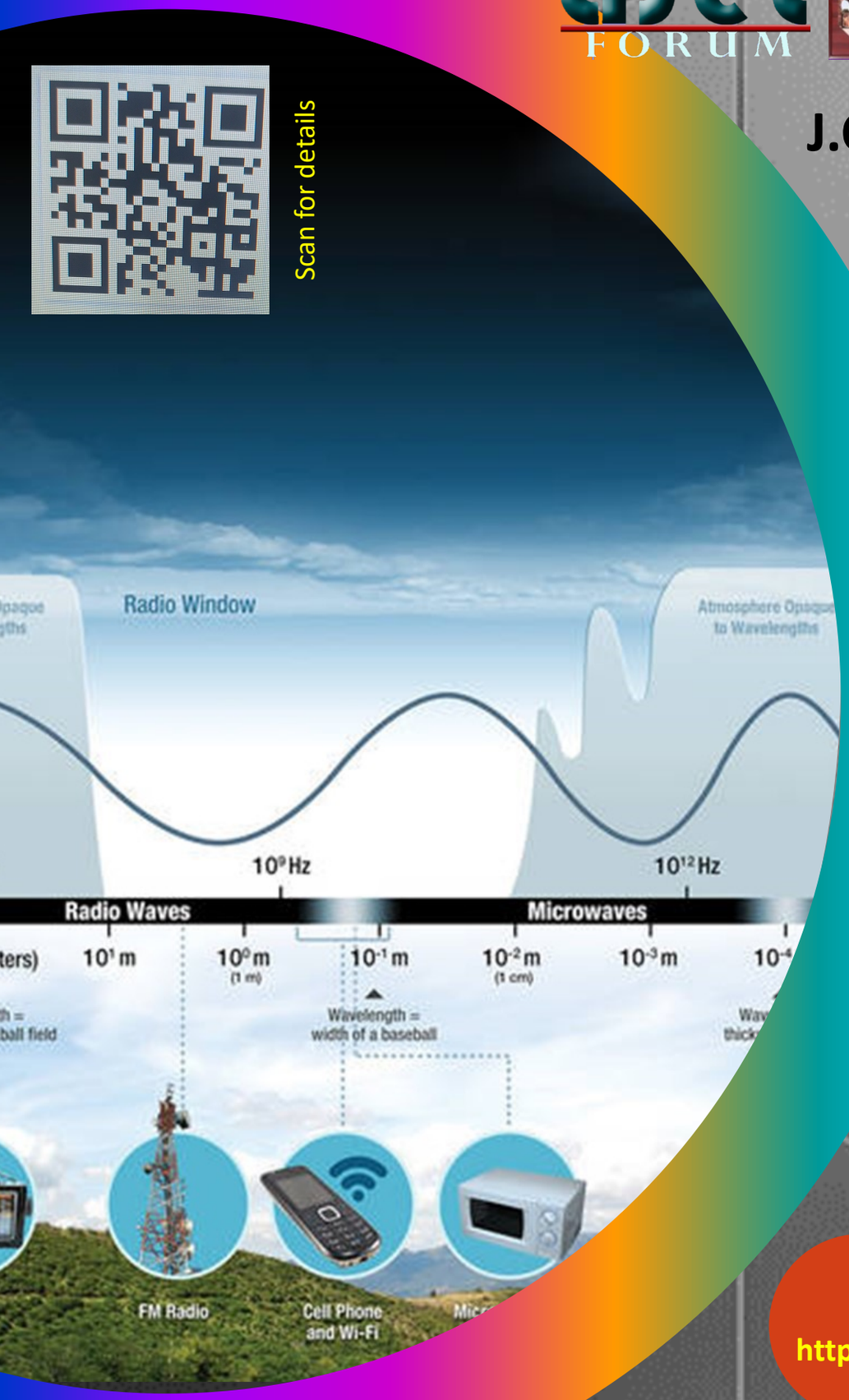

J.C.Bose - an experimentalist far ahead of his times

Prof. Kunal Ghosh (IIT Kanpur (Retd.))

Jagadish Chandra Bose, first of all, validated James C. Maxwell's theory by testing one of his predictions. Maxwell had predicted the existence of electromagnetic (in brief EM) waves outside the solar spectrum. Heinrich Hertz was the first to generate such waves, called electric waves (now called radio waves) but he could not quantitatively prove that they were EM waves. Bose was the first to accomplish this task. He could do so because he purposively produced EM waves that were about 100 times smaller than Hertz's waves.

Hertz had tried to measure their wavelength by the method of standing waves which was not accurate. Bose devised an instrument that used diffraction and could measure the wavelength very accurately. The frequency of the waves was known apriori from the circuit parameters of the oscillator. Frequency multiplied by wavelength gave wave speed, and that turned out to be the speed of light. Bose published a paper on this in the Proceedings of the Royal Society, and Lord Rayleigh of Cambridge University called it 'a paper of Special Excellence' and, at his recommendation, London University conferred the degree of D.Sc. on Bose in absentia. Unfortunately, the scientific community of the world is Euro-centric and they have given the entire credit to Hertz, in all text and reference books, without even a mention of Bose. More unfortunately, all text book writers in India have aped the Europeans and done the same.

Bose's other remarkable work is on radio communication, and fortunately, it has now been established beyond doubt that Marconi had used foul play and copied one of Bose's instrument without acknowledging him. Hence, the 1909 Nobel Prize on physics was deserved by Bose, instead of Marconi.

Kunal Ghosh has been a professor at and head of Department of Aerospace Engineering, Indian Institute of Technology (IIT) Kanpur. After retirement, he worked as a professor at the Institute of Aeronautical Engineering, Hyderabad. Later, he became an adjunct professor at the department of mechanical engineering, Nirma University, Ahmedabad. He continued to work as a part time visiting professor at the same institution until August 2021.

He has been a member of the Royal Aeronautical Society, UK, and British Wind Energy Association. He is a lifetime member of the Aeronautical Society of India, Indian Society of Technical Education, Institution of Engineers (India), and Indian Academy of Social Sciences.

Colloquium is online
YouTube Live Link:
https://youtube.com/live/DsI2LPCGjtk?feature=share

11 August 4 p.m.