




The Vanguard Lecture

Guest	Dr. Akhilesh Jain SO/H and Head, Solid State RF Amplifier Section RF Systems Division Raja Ramanna Centre for Advanced Technology Department of Atomic Energy Government of India	
Date	13 October 2017	
Lecture Title	High Power Solid-State RF Transmitter	
Abstract	<p>High Power RF amplifier is an integral part of the in radar, satellite and other advanced applications such as particle accelerators. The last one is required for energizing the resonating structures. Such accelerators are widely used in many frontier areas of basic and applied research in physics, chemistry and biology using synchrotron radiation and many technical and industrial fields like radiotherapy, ion implantation, industrial processing and sterilization of medical products. Particles to be accelerated are made to propagate through these resonating structures and RF amplifier system creates a desired electromagnetic field inside this resonating structure which in turn accelerates the particles to desired energy level and also compensate synchrotron radiation loses. Solid state power amplifiers are now encouraged to replace very high power tube based infrastructure However, being strategic devices, their availability becomes uncertain due to prevailing export control conditions. RRCAT is one of the premier research institute of department of Atomic Energy where, solid state technologies based 225 kW RF system is operating in round the clock mode for more than last 5 years. Such high power was attempted here first time in the world.</p> <p>This lecture will focus on the innovative technology of harmonic tuned operating modes, radial combiner; aperture coupled rectangular directional coupler and transmitter architecture and their application for designing such high power solid state of the art amplifiers.</p>	
Attendees	I Year EE B.Tech. Students + II Year EE B.Tech. Students + III Year EE B.Tech. Students + M.Tech. EE Students + Ph.D. EE Students + Any other interested student + All faculty members are cordially invited	
Venue	Lecture Hall Complex (Room number 106)	
Time	17:00 – 19:00 60 minutes lecture + 30 minutes interaction +30 minutes Questions & Answers	

Speaker's Bio-data

Dr. Akhilesh Jain received M. Tech. in Electrical Engineering (Electromagnetics) from Indian Institute of Technology Kanpur in 1993 and PhD in Engineering Science from Homi Bhabha National Institute in 2014. He joined Raja Ramanna Centre for Advanced Technology (RRCAT), Indore in 1994. Since then, he is engaged in the research and development of high power solid-state radio frequency and microwave amplifier and related components. His main areas of interest are harmonic tuned solid-state power amplifiers, radial power combiners, dielectric resonator loaded structures and system level analysis for high power amplifiers. His design and development of first time attempted 225 kW transmitters was highly appreciated. He is involved in many other designs to cater requirement of particle accelerators. He has authored and coauthored several journal and conference papers. He is regular reviewer of IEEE-MTT and other journals' papers. He is actively involved for supplying huge quantity of 40 kW solid-state amplifiers for Fermi Lab at Chicago as per MOU with US Dept. of Energy under DAE mega scienceproject titled 'Physics and Advanced Technologies for High Proton Accelerators'. Presently he is Head of Solid State RF Amplifiers Section at RRCAT.