



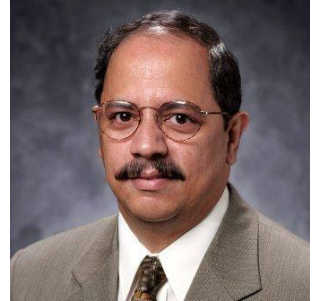
IEEE NSW AP/MTT Joint Chapter

And

Faculty of Engineering and Information Technology, UTS

IEEE AP-S Distinguished Lecture

Dr. Sudhakar K Rao



Date : Friday, 6 November 2015

Time : 3:00 pm to 5:00 pm

Location : UTS, Building11, level 6, Room : 408

University of Technology Sydney NSW 2007

Further Information:

A/Prof. Ananda Sanagavarapu (Ananda.Sanagavarapu@uts.edu.au)

**Advanced Antenna Systems for
Satellite Communications Payloads**

21st century has so far seen several new satellite services such as local-channel broadcast for direct broadcast satellite service (DBS), high capacity K/Ka-band personal communication satellite (PCS) service, hosted payloads, mobile satellite services using very large deployable reflectors, high power hybrid satellites etc. All these satellite services are driven by the operators need to reduce the cost of satellite and pack more capability into the satellite. Antenna sub-system design, mechanical packaging on the spacecraft, and RF performance become very critical for these satellites. This talk will cover recent developments in the areas of antenna systems for FSS, BSS, PCS, & MSS satellite communications. System requirements that drive the antenna designs will be presented initially with brief introduction to satellite communications. Phased array antenna and reflector antenna designs will also be covered in this talk. Advanced antenna system designs for contoured beams, multiple beams, and reconfigurable beams will be presented. Topics such as antenna designs for high capacity satellites, large deployable mesh reflector designs, low PIM designs, and power handling issues will be included. Introduction to remote sensing antennas with examples will be included in the talk. Future trends in the satellite antennas will be discussed. At the end of this talk, engineers will be exposed to typical requirements, designs, hardware, software, and test methods for various satellite antennas..

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Dr. Sudhakar Rao's Biography

Dr. Sudhakar K. Rao received a BE from NIT, Warangal, India, M.Tech from IIT, Kharagpur and a PhD from the IIT, Madras, in 1974, 1976, and 2000 respectively. During 1976-1977 he worked as a Technical officer at ECIL, Hyderabad and during 1980-81 worked as a Senior Scientist at the Electronics and Radar Development Establishment, Bangalore. He was a post-doctoral fellow at University of Trondheim, Norway and later worked as a research associate at University of Manitoba, Canada during 1981-1983. During 1983-1996, he worked at Spar Aerospace Limited (now MDA), Montreal, Canada, as a Staff Scientist. From 1996-2003 he worked as Chief Scientist/Technical Fellow at Hughes/Boeing Satellite Systems. During the period 2003-2010, he worked as a Corporate Senior Fellow at Lockheed Martin Space Systems and **currently he is a Technical Fellow at Northrop Grumman Aerospace Systems**, Redondo Beach, CA leading a group on advanced antenna systems for space and aircraft applications.

Dr. Rao developed antenna payloads for more than 65 satellites including first mobile satellite M-Sat and first Direct Broadcast Satellite with local channels (DirecTV-4S). His work on development of radiation templates for complex radiation patterns of satellite antennas for interference analysis was adopted and recommended by the International Telecommunication Union (ITU)/CCIR in 1992 as the world-wide standard for satellite manufacturers and operators. He authored over 165 technical papers and has 44 U.S. patents. He authored and co-edited three text book volumes on "Handbook of Reflector Antennas and Feed Systems" that are published in June 2013 by the Artech House.

Dr. Rao became an **IEEE Fellow** in 2006 and a Fellow of IETE in 2009. He received several awards and recognitions that include 2002 Boeing's Special Invention Award for series of patents on satellite antenna payloads, 2003 Boeings' technical achievement award, Lockheed Martin's Inventor of Technology award in 2005 & 2007, IEEE Benjamin Franklin Key Award in 2006, Delaware Valley Engineer of the Year in 2008, and Asian American Engineer of the year award in 2008. He received IEEE Judith Resnik Technical Field Award in 2009 for pioneering work in aerospace engineering. He is the recipient of the IETE's 2015 Prof. S.N. Mitra Memorial award. He received best reviewer recognition by the IEEE Transactions on Antennas & Propagation Journal for the years 2014 and 2015. Dr. Rao is appointed as the Distinguished Lecturer by the IEEE AP-Society for a three year period (2014-2016). He is the Chair for the IEEE AP-S "Industry Initiatives Committee" with 10 international members, Associate Editor for the IEEE Antennas & Propagation Magazine's "Antenna Applications Corner", Associate Editor for the IEEE Transactions on Antennas & Propagation Journal, Special Session Organizer/Chair for the last six IEEE APS/URSI Symposia, Technical Program Committee member for IEEE APS/URSI Symposia from last 10 years, and reviewer for the IEEE AP Transactions, WPL, IEE etc. Dr. Rao mentored more than 50 engineers in his career who are now in key technical and management positions throughout the aerospace industry.

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