

ATMS Tutorial 2013

Held in Cooperation with the IEEE AP-S/MTT Society Kolkata Joint Chapter

Monday, February 11, 2013

**The Pride Hotel Kolkata
9:00 am – 5:30 pm**

Modern Topics in Antenna Measurements, Diagnostics and Optimizations: From Fundamentals to Recent Advances

Instructor: Yahya Rahmat-Samii, Professor, University of California Los Angeles

Course Outline

Fundamental of EM Concepts for Antenna Characterizations

Antenna Radiated Fields, Ideal Dipole, Solution of Wave Equations and Special Functions

Fundamentals of Various Near-Field Measurement Techniques

Equivalence Theorem, Spectral Formulation and Probe Corrections

Understanding Antenna Near-Field Diagnostic Techniques

Simulation Models, Back-Projections, Sampling Theorems

Case Studies of Several Reflector and Array Antenna Measurements

Reflector and Array Antenna Measurement Examples

Phaseless Measurements and Recent Advances

Why Phaseless Measurements, Phase Retrieval Algorithms, Measured Results

Advances in Antenna Design Optimizations

Genetic Algorithms (GA) and Particle Swarm Optimization (PSO)

In addition, guest speaker Dr. Vince Rodriguez of ETS-Lindgren will present

Design and Evaluation of RCS Test Ranges

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IEEE EMC Society Distinguished Lecturer (2013-2014) will present

Design and Evaluation of RCS Test Ranges

Speaker Biographies



Instructor - Dr. Rahmat-Samii is a Fellow of the IEEE, Fellow of the Institute of Advances in Engineering (IAE) and Stan Gillespie Fellow of AMTA. He is also a member of Commissions A, B, J and K of USNC-URSI, the Antenna Measurement Techniques Association (AMTA), Sigma Xi, Eta Kappa Nu and the Electromagnetics Academy. He was Vice-President and President of the IEEE Antennas and Propagation Society (AP-S) in 1994 and 1995, respectively. He was appointed an IEEE AP-S Distinguished Lecturer and presented lectures internationally. He was a member of the Strategic Planning and Review Committee (SPARC) of the IEEE. He was the IEEE AP-S Los Angeles Chapter Chairman (1987-1989); his chapter won the

best chapter awards in two consecutive years. He is listed in Who's Who in America, Who's Who in Frontiers of Science and Technology and Who's Who in Engineering. Professor Rahmat-Samii is the designer of the IEEE Antennas and Propagation Society (IEEE AP-S) logo displayed on all IEEE-AP-S publications. He has been the plenary and millennium session speaker at numerous national and international symposia. He has been the organizer and presenter of many successful short courses worldwide. He was a Director and Vice President of the AMTA Board of Directors for three years. He has been Chairman and Co-chairman of several national and international symposia. He was a member of the University of California at Los Angeles (UCLA) Graduate council for three years. He was the chair of USNC-URSI for the period of 2009-2011.

For his contributions, Dr. Rahmat-Samii has received numerous NASA and JPL Certificates of Recognition. In 1984, he received the Henry Booker Award from URSI, which is given triennially to the most outstanding young radio scientist in North America. Since 1987, he has been designated every three years as one of the Academy of Science's Research Council Representatives to the URSI General Assemblies held in various parts of the world. He was also invited speaker to address the URSI 75th anniversary in Belgium. In 1992 and 1995, he received the Best Application Paper Prize Award (Wheeler Award) for papers published in 1991 and 1993 IEEE Transactions on Antennas and Propagation. In 1999, he received the University of Illinois ECE Distinguished Alumni Award. In 2000, Prof. Rahmat-Samii received the IEEE Third Millennium Medal and the AMTA Distinguished Achievement Award. In 2001, Rahmat-Samii received an Honorary Doctorate in physics from the University of Santiago de

Compostela, Spain. In 2001, he became a Foreign Member of the Royal Flemish Academy of Belgium for Science and the Arts. In 2002, he received the Technical Excellence Award from JPL. He received the 2005 URSI Booker Gold Medal presented at the URSI General Assembly in India. He is the recipient of the 2007 Chen-To Tai Distinguished Educator Award of the IEEE Antennas and Propagation Society. In 2008, he was elected to the membership of the National Academy of Engineering (NAE). In 2009, he was selected to receive the IEEE Antennas and Propagation Society highest award, Distinguished Achievement Award, for his outstanding career contributions. In 2011, he received the prestigious IEEE Electromagnetics Award as well as the UCLA Distinguished Teaching Award.



Guest Speaker - Vince Rodriguez attended The University of Mississippi (Ole Miss), in Oxford, Mississippi, where he obtained his B.S.E.E. in 1994. Following graduation Dr. Rodriguez joined the department of Electrical Engineering at Ole Miss as a research assistant. During that time he earned his M.S. and Ph.D. (both degrees on Engineering Science with emphasis in Electromagnetics) in 1996 and 1999, respectively. After a short period as a visiting professor at the Department of Electrical Engineering and Computer Science at Texas A&M University-Kingsville, Dr. Rodriguez joined EMC Test Systems (now ETS-Lindgren) as an RF and Electromagnetics engineer in June 2000. During this time he was involved in E field generator design and the RF design of several anechoic chambers, including rectangular and taper antenna pattern measurement chambers, some operating from 100MHz to 40GHz. He was also the principal RF engineer for the anechoic chamber at the Brazilian Institute for Space Research (INPE) the largest chamber in Latin America and the only fully automotive, EMC and Satellite testing chamber. In September 2004 Dr. Rodriguez took over the position of Senior Principal Antenna Design Engineer, placing him in charge of the development of new antennas for different applications and on improving the existing antenna line. Since the fall of 2010 he has served as the Antenna Product Manager. In this position Dr. Rodriguez oversees all technical and marketing aspects of the antenna products at ETS-Lindgren. The antennas developed by Dr. Rodriguez include broadband double and quad-ridged guide horns; high field generator horns; stacked LPDAs for automotive and military testing; and printed antennas for wireless testing. While mainly dedicated to antenna design, Dr. Rodriguez has continued being involved in novel anechoic chamber designs, such as the conical tapered L-shaped range at the National University of Singapore, a secondary chamber for INPE in Brazil, and tapered anechoic chambers for the Indian Space Research Organization (ISRO) in Ahmedabad, Gujarat, India.

Dr. Rodriguez is the author of more than fifty publications including journal and conference papers as well as book chapters. He holds patents for hybrid absorber and for a dual ridge horn antenna. Dr. Rodriguez is a Senior Member of the IEEE and several of its technical societies. He is also a Senior Member of the Antenna Measurements Techniques Association (AMTA), as well as a member of the AMTA board of directors. Dr. Rodriguez is a member of the Applied Computational Electromagnetic Society (ACES). He has served as a reviewer for the ACES Journal and for the Journal of Electromagnetic Waves and Applications (JEWAW). He has served as chair of sessions at several conferences of the IEEE, AMTA, CPEM (conference on precision electromagnetic measurements) and ATMS (Antenna Test and Measurement Society). Dr. Rodriguez is a Full member of the Sigma Xi Scientific Research Society and of the Eta Kappa Nu Honor Society. He was recently appointed a Distinguished Lecturer by the IEEE Electromagnetic Compatibility (EMC) Society for the term 2013-2014.