



Pushing the Boundaries of Computational Electromagnetics: Application to Antenna Designs and Placement of Antennas

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Fort Wayne IEEE Section

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Engineering and Technology Building, KT146, IPFW
Pizza/drink provided
Please register it at:

https://purdue.qualtrics.com/SE/?SID=SV_0lkanjGtPGLURG5

This talk is counted as one-hour Indian PDH.

Abstract:

Advances in computational electromagnetic tools have made possible antenna design and integration of antennas on various ground, sea, air and space platforms. Now numerical simulations can be performed to evaluate the effects of antenna design, placement, radiation hazard, EMC/EMI, etc. for wide ranging industry applications. Numerical approaches that include full-wave techniques such as Method of Moments (MoM), Multilevel Fast Multipole Method (MLFMM) and asymptotic techniques such as Physical Optics (PO) and Uniform Theory of Diffraction (UTD) are being utilized to solve many challenging problems that were not possible in the past. For many practical applications, sometimes it is necessary to study the electromagnetic behavior on a specific structure over a broad frequency band. In this talk, an overview of various advanced numerical techniques that are useful for antenna designs and placement studies will be presented. The talk will also include an introduction to Characteristic Mode Analysis (CMA) and its use in novel antenna designs.

Biography



Dr. C. J. Reddy received his Ph.D. in 1988 in Electrical Engineering from the Indian Institute of Technology, Kharagpur, India. Dr. Reddy was a research associate at NASA Langley Research Center, and previously a research fellow at the Natural Sciences and Engineering Research Council (NSERC) of Canada. While conducting research at NASA Langley, he developed various computational codes for electromagnetics and received a Certificate of Recognition from NASA for development of a hybrid Finite Element Method/Method of Moments/Geometrical Theory of Diffraction code for cavity backed aperture antenna analysis. Currently, Dr. Reddy is the Vice President, Business Development-Electromagnetics at Altair Engineering, Inc.(www.altair.com). At Altair, he is leading the marketing and support of commercial 3D electromagnetic software, FEKO (www.feko.info) in Americas. Dr. Reddy is also the President of Applied EM Inc (www.appliedem.com), a small company specializing in computational electromagnetics, antenna design and development. At Applied EM, Dr. Reddy successfully led many Small Business Innovative Research (SBIR) projects from the US Department of Defense (DoD). Dr. Reddy is a Senior Member of Institute of Electrical and Electronics Engineers (IEEE) and also a Senior Member of Antenna Measurement Techniques Association (AMTA). He has been elected Fellow of the Applied Computational Electromagnetic Society (ACES) in 2012 and served on ACES Board of Directors from 2006 to 2012. Currently he serves as the Secretary of ACES. Dr. Reddy is a member of IEEE APS - Industry Initiatives Committee (IIC). He published 35 journal papers, 54 conference papers and 17 NASA Technical Reports to date. Dr. Reddy is a co-author of the book, "Antenna Analysis and Design Using FEKO Electromagnetic Simulation Software," published in June 2014 by SciTech Publishing (An Imprint of IET). Dr. Reddy was the General Chair of ACES 2011 Conference held in Williamsburg, VA during March 27-31, 2011. And also ACES 2013 conference, Monterey CA (March 24-28, 2013). He was the Co-General Chair of 2014 IEEE International Symposium on Antennas and Propagation and USNC-URSI Radio Science Meeting held during July 6-11, 2014 in Memphis, TN. Dr. Reddy is the General Co-Chair for ACES 2015 conference (<http://www.aces-society.org/conference/2015/>) held in Williamsburg, Virginia during March 22-26, 2015.