

Welcome
Seminar Series of the Department of Computer Science Electrical Engineering
Presents

A Selective Description of Research in Computational Electromagnetics

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Abstract

Electromagnetic wave propagation is fundamental to our understanding of a large class of practical problems, such as radars, wireless, satellite communications, telemetry, remote sensing and biomedical imaging. This presentation shall highlight our current ongoing research, which includes (a) site-specific propagation modeling (b) theoretical analysis and simulation studies of antennas in presence of convex structures for some tactical applications, and (c) analytical, simulation and experimental studies on miniature, broadband micro-strip antennas. The presentation will be jointly given by Dr. Chatterjee and his students (Shaun Derek Walker and Dhivya Ketharnath).

Conformal array antennas are extremely difficult to analyze, but have vast applications to missile defense, radars and for some cases in the design of base station antennas with SDMA (Space Division Multiple Access) capabilities. In this presentation numerical results for a dipole array disposed about a perfectly conducting circular cylinder will be presented including a summary of the relevant boundary value problem from. Some focus on the computational aspects will be included, with an outline of further analytical work that is currently in progress.

The third and last part of this presentation shall briefly describe the progress in research work in developing analytical techniques for design of miniature, ultrawideband microstrip antennas. Such designs have found useful in a wide variety of applications such as radars, wireless and biomedical applications. Additionally due to the analytical nature of these classes of investigations, the results are useful particularly for design applications due to the paucity of information .

Bio: Deb Chatterjee is currently associate professor at the CSEE Department, UMKC. He obtained his BSETE (Jadavpur Univ., 1982), M.Tech (IIT Kharagpur, 1984), M.A.Sc (Concordia University, 1992), PhD (University of Kansas, 1998). His research interests are in high-frequency techniques for antennas & propagation applications, miniature ultrawideband microstrip antennas.

Shaun Walker is currently a graduate student at the CSEE department. He obtained his BSECE from UMKC in 2007.

Dhivya Ketharnath is currently a graduate student at the CSEE department. She obtained her BSEE from Anna University, Chennai, India in 2006.