

Seminar on

Parallel Solution of EM problems

by

Prof. Tapan K. Sarkar, Fellow of IEEE

Distinguished Lecturer, IEEE Antennas & Propagation Society

Department of Electrical and Computer Engineering, Syracuse University,
USA

Abstract

The future of computational Electromagnetics is going to change drastically with the new generation of computer chips which are multi-core instead of single core. Previously, advancements in chip technology meant an increase in clock speed, which was typically a benefit which computational code users could enjoy. That is no longer the case. In the new roadmaps for chip manufacturers, speed has been sacrificed for improved power consumption and the direction is multi-core CPUs. Recently, chip vendors have shifted their strategy for improving microprocessor performance to delivering multiple processor cores per chip instead of continuing to pursue dramatic increases in clock frequency. The general trend in processor development has been from multi-core to many-core: from dual-, quad-, eight-core chips to ones with tens or even hundreds of cores. This change represents something of a cataclysmic shift for software. In the past, application programmers painlessly rode the wave of higher clock frequencies to faster performance. With the advent of multi-core processors, improvements in application performance will depend upon making effective use of increasing levels of coarse-grain parallelism. As a result, parallel programming has suddenly become relevant for all computer systems. In this talk, a new roadmap for computational code designers is provided, demonstrating how to navigate along with the chip designers through the multi-core advancements in chip design. Results obtained on a range of computer platforms will illustrate this roadmap. The research presented in this talk will show how to take the shortest route to highly efficient parallel electromagnetic (EM) code. This talk will also present solutions of some EM problems.

Biography

Tapan K. Sarkar received the B.Tech. degree from the Indian Institute of Technology, Kharagpur, in 1969, the M.Sc.E. degree from the University of New Brunswick, Fredericton, NB, Canada, in 1971, and the M.S. and Ph.D. degrees from Syracuse University, Syracuse, NY, in 1975. He is now a Professor in the Department of Electrical and Computer Engineering, Syracuse University. His current research interests deal with numerical solutions of operator equations arising in electromagnetics and signal processing with application to system design. He obtained one of the “best solution” awards in May 1977 at the Rome Air Development Center (RADC) Spectral Estimation Workshop. He received the Best Paper Award of the IEEE Transactions on Electromagnetic Compatibility in 1979 and in the 1997 National Radar Conference. He has authored or coauthored more than 300 journal articles and numerous conference papers and 32 chapters in books and 15 books.

He received Docteur Honoris Causa both from Universite Blaise Pascal, Clermont Ferrand, France in 1998 and from Politechnic University of Madrid, Madrid, Spain in 2004. He received the medal of the *friend of the city of Clermont Ferrand*, France, in 2000.

Date : 28 Feb., 2012 (Tuesday)
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Venue : G6315, Academic 1 Building,
City University of Hong Kong

*** ALL ARE WELCOME ***

Enquiries: Prof K W Leung, Department of Electronic Engineering
Tel. : 3442 9659 Fax : 2788 7791 e-mail: eekleung@cityu.edu.hk