

Seminar Announcement

“Ask what computational electromagnetics can do? Communications, optics, metamaterials and more”

Dr. Costas D. Sarris

Associate Professor / The Eugene Polistuk Chair in Electromagnetic Design
Dept. of Electrical and Computer Engineering
University of Toronto

Monday, December 13, 2010

3:00pm – 4:00pm

E6-060

Light refreshments will be provided prior to the seminar.

Electromagnetic field computation (the area of scientific computing that explores the numerical solution of Maxwell's equations) is an effective tool for understanding a large and diverse range of applications in electrical engineering.

This talk will focus on wireless/wireline channel modeling, optical pulse propagation and the design of artificial dielectrics with unconventional properties beyond those encountered in natural media (widely called metamaterials). We will see these topics mainly through the lens of numerical methods related to the Finite-Difference Time-Domain (FDTD), which solve Maxwell's equations in the time-domain, accelerated both by mathematical/software innovations as well as by means of general purpose computing on graphics processor units (GP-GPU). Finally, some interesting interrelations between the exciting area of transformation optics and computational electromagnetic solvers will be explored.

Biography

Costas Sarris received a Ph.D. in Electrical Engineering and a M.Sc. in Applied Mathematics from the University of Michigan, Ann Arbor, in 2002. He is currently an Associate Professor and the Eugene V. Polistuk Chair in Electromagnetic Design at the Edward S. Rogers Sr. Dept. of Electrical and Computer Engineering, University of Toronto. His research interests are in the area of numerical electromagnetics, with emphasis on high-order, multiscale/multi-physics computational methods, modeling under stochastic uncertainty, as well as applications of time-domain analysis to wireless channel modeling, wave-propagation in complex media and meta-materials, and electromagnetic compatibility/interference (EMI/EMC) problems.



Prof. Sarris was the recipient of the Early Researcher Award from the Ontario Government and the Gordon R. Slemon (teaching of design) award from the ECE Department of the University of Toronto. His students have received paper awards at the 2009 IEEE MTT-S International Microwave Symposium, the 2008 Applied Computational Electromagnetics Society conference and honorable mentions at the 2008, 2009 IEEE International Symposia on Antennas and Propagation.

He serves as an Associate Editor for the IEEE Transactions on Microwave Theory and Techniques, and an Area Editor (Numerical Modeling) for the IEEE Microwave Magazine.