

ECE Department Seminar

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

**Costas Sarris
Associate Professor
The Eugene Polistuk Chair in Electromagnetic Design
Electrical and Computer Engineering
University of Toronto**

Friday February 26, 11:00AM, SEO 1000

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 meta-materials). 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.

Bio

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. Department of Electrical and Computer Engineering, University of Toronto. His research interests are in the area of numerical electromagnetics, with emphasis in high-order, multiscale/multi-physics computational methods. He is involved with basic research in novel numerical techniques, as well as applications of time-domain analysis to wireless channel modeling, wave-propagation in complex media and meta-materials, electromagnetic compatibility/interference (EMI/EMC) problems and modeling under uncertainty. Prof. Sarris was the recipient of the Early Researcher Award from the Ontario Government in 2007 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 is a Senior Member of the IEEE and serves as an Associate Editor for the IEEE Microwave and Wireless Components Letters, the vice Chair of the IEEE Toronto section in Electromagnetics and Radiation (a joint MTT/AP/EMC section) and the Technical Program

Committee co-chair for the 2010 IEEE International Symposium on Antennas and Propagation. He is the Chair of the Sub-Committee on Time-Domain Methods of the Technical Program Committee of the IEEE MTT-S International Microwave Symposium and the Guest Editor of the IEEE Microwave Magazine Special Issue on Time-Domain Methods for Microwave CAD (April 2010).

Host: Danilo Erricolo, erricolo@ece.uic.edu, (312) 996 5771