The IEEE Electromagnetic Compatibility Society Singapore, IHPC and IME
Presents:

Recent Advances in Modeling and Simulation of High-Speed Electronics, EMC/EMI and Electronic Packaging

Michel S Nakhla

Michel S Nakhla is a Fellow of IEEE, Professor and Chairman of Department of Electronic engineering , Carleton University, Canada and BNR/NSERC Senior Industrial CAE. Formerly with Bell-Northern Research (Ottawa) as a Member of Technical Staff and Senior Manager. Founder of the High-Speed CAE research group at Carleton University. Member of the Technical Program Committee of many conferences: SPI, EPEP, IMS. Member of the Technical Coordinating Committee of MICRONET. Member of the Association of Professional Engineers of Ontario. Recent author of two books, "Modelling and Simulation of high-Speed VLSI Interconnects" and "Asymptotic Waveform Evaluation and Moment Matching for Interconnect Analysis" together with 6 other multimedia productions.

Location: Auditorium
Institute of High Performance Computing (IHPC)
1 Science Park Road,
#01-01 The Capricorn
Science Park II
Singapore 117528

Date: Tuesday, November 26, 2003

Time: 2:00 to 3:30 pm

Admission: Free of Charge

Please fill in the registration form and send them in early to avoid disappointment. Limited seats are available.

Pre Registration Form to Ms Wendy Tan , email (*wendy@ihpc.a-star.edu.sg*) (**To be confirmed latter**) or fax this response form to 64191280

Please print/write clearly in black for fax transmission.

1 Mr/Ms/ _____ (EMCS / IEEE / others) E-mail_____

2 Mr/Ms/ _____ (EMCS / IEEE / others) E-mail_____

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Company:_____

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(ver. 0 6/11/03)

Chapter meeting of the EMC Society, Singapore

The Singapore IEEE EMC Society in conjunction with Institute of High Performance Computing (IHPC) and the Institute of Microelectronics (IME) is presenting our chapter meeting with Prof Nakhla to speak on the subject about the recent advances in modelling and simulation of high speed electronics with respect to EMC/EMI (Electromagnetic Compatibility/Interference) and electronic packaging. This is a topic that focuses on the basis of CAE tools that allows us to achieve good signal integrity and acceptable EMC performance. This is an opportunity for chapter members to meet and get together after a long break, since our meeting in March,. This technical talk will be useful for engineers dealing with the various CAE tools. The purpose of this event is to offer some background on the role played by CAE in modelling and simulation that can provide an insight to the product designer and enginees in the R&D field. This session seeks to highlight recent advances in this field.

Outline:

The rapid growth in microwave and VLSI circuit technology coupled with the trend towards more complex/miniature devices is placing enormous demands on computer-aided design algorithms and tools. The design requirements are becoming very stringent, demanding higher operating speeds, sharper excitations, denser layouts and low power consumption. Consequently, traditional boundaries between circuit, EM and thermal design considerations are rapidly vanishing. Also, mixed frequency/time analysis is creating difficulty for traditional simulators, due to the emerging need for inclusion of high-speed models. The high-speed interconnect effects such as ringing, delay, distortion, crosstalk, attenuation and reflections, if not predicted accurately at early design stages, can severely degrade the system performance. Managing the modelling, simulation and design optimization in such a complex environment presents highly demanding challenges.

This tutorial presents an overview of interconnect modeling/simulation strategies with emphasis on diverse algorithms and applications of model-reduction techniques. Various interconnect models will be considered including RC/RLC lumped, distributed, full-wave, measured and EMI-based. The basic principles of model-reduction techniques will be described and also their extension to frequently encountered practical situations such as simulation of subcircuits characterized by measured S-parameters and frequency-dependent components (e.g. resulting from skin and proximity effects) will be described. The underlying basic concepts will be demonstrated by several practical examples..

About the speaker:

Prof Michel S Nakhla is the Professor and Chairman of Department of Electronic engineering , Carleton University, Canada. From 1976-88, he was worked with Bell-Northern Research, Ottawa as a Member of Technical Staff and then Senior Manager. From 1988 he is the Professor, Department of Electronics, Carleton University and BNR/NSERC (Bell Northern Research/ Natural Sciences and Engineering Research Council) Senior Industrial CAE Chair. He is also the Founder of the High-Speed CAE research group at Carleton University. Prof Nakhla is a Fellow of IEEE since 1998. His research Interests include Computer-Aided Design Tools and Methodologies for Managing Complexity of High-Speed Circuits and Systems, EMC/EMI, Computer-aided design of VLSI circuits and systems; Design tools for mixed analog/digital high frequency circuits; Modeling and simulation of high-speed interconnects; Simulation of nonlinear circuits, including distributed components; Multidisciplinary optimization; Statistical simulation and design centring; Thermal and EM emission analysis; Noise analysis and modelling of fibre optic communication systems.

URLs:

Prof Nakhla's home page
URL: http://web.doe.carleton.ca/~msn/

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