The Institute of Electromagnetic Theory at TUHH is pleased to have as international academic guest on April 29, 2011:

Bruce Archambeault, Ph.D.
IEEE Fellow, IBM Distinguished Engineer
IBM EMC Center of Competence, North Carolina, USA

Students, faculty, and professionals from academia and industry interested in the latest trends of electromagnetic compatibility (EMC) of digital systems and the application of microwave engineering concepts to their design are cordially invited to attend Dr. Archambeault’s talk on:

**Electronic Band Gap Structures for High Speed Digital Systems**

Room 2022, Building D
Hamburg University of Technology (TUHH)
Schwarzenbergstraße 95, 21073 Hamburg

14:00 – 15:00, April 29, 2011

Dr. Archambeault is an IBM Distinguished Engineer at IBM, a member of the Board of Directors for the IEEE EMC Society, and a past Board of Directors member for the Applied Computational Electromagnetics Society (ACES). He has authored or co-authored numerous publications in the area of computational electromagnetics applied to real-world EMC problems.

Information on how to get to TUHH:

http://www.tu-harburg.de/tuhh/uni/lageplan.html
Abstract of the Talk:

High speed digital signals are most often structured as differential signals. If perfect balance is maintained, then the signals perform very well and there is no external signal integrity (SI) and immunity issues nor any electromagnetic compatibility (EMC) emissions issues. However, small amounts of imbalance or asymmetry can have significant impact on the amount of differential-to-common mode conversion, as well as common-to-differential mode conversion. This conversion can, in turn, create SI and EMC problems. This seminar will demonstrate how easily common mode signals can be created from slight imbalances and asymmetries.

Discrete filters that operate at these high frequencies to remove unwanted common mode signals, without affecting the desired differential mode signals are not available for typical printed circuit board use at high data rates. Electronic Band Gap (EBG) structures have been shown to allow designers to create a filter which blocks the unwanted common mode signals without harming the desired differential mode signals. These EBG structures are created by selective etching imperfections in the nearest ground-reference plane and so are not a discrete part that must be added.

This talk will discuss how to design these EBG structures and demonstrate the performance from both simulations and measurements. Future directions will also be addressed.

Biography of the Speaker:

Dr. Bruce Archambeault is an IBM Distinguished Engineer at IBM in Research Triangle Park, NC. He received his B.S.E.E degree from the University of New Hampshire in 1977 and his M.S.E.E degree from Northeastern University in 1981. He received his Ph. D. from the University of New Hampshire in 1997. His doctoral research was in the area of computational electromagnetics applied to real-world EMC problems.

Dr. Archambeault has authored or co-authored a number of papers in computational electromagnetics, mostly applied to real-world EMC applications. He is a member of the Board of Directors for the IEEE EMC Society and a past Board of Directors member for the Applied Computational Electromagnetics Society (ACES). Within the IEEE/EMC Society he currently is the Technical Advisory Committee Chair and the Vice President for Conferences. He has served as a past IEEE/EMCS Distinguished Lecturer. He is the author of the book “PCB Design for Real-World EMI Control” and the lead author of the book titled “EMI/EMC Computational Modeling Handbook”.

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