

**IEEE Antennas and Propagation Society
Distinguished Lecture on**

Higher Order Modeling for Computational Electromagnetics

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The progress in the area of Computational Electromagnetics, together with the cost reduction and continuous increase of the computational speed and power of modern computers, have contributed to the development and broad diffusion of numerical software for the analysis and design of complex electromagnetic structures and systems. The geometry and the materials of these structures can nowadays be modeled by powerful pre-processor codes able to provide high order description of the problem to the electromagnetic “solver-software”. To take advantage of the high quality models available by using the modern pre-processors, several researchers have also developed in the last decade high order basis functions for finite electromagnetic solver codes. This presentation is intended to provide an overview of the most recent developments obtained in this special area. After a brief overview of the fundamentals of finite methods, an in-depth coverage of higher order models for Moment Method and Finite Element Method applications is provided, thereby considering interpolatory and hierarchical higher order vector bases with a detailed discussion of the implementation problems and of the advantages provided by the use of higher-order models.

Monday April 4, 2011

5:30pm: Light refreshment
6:00pm IEEE Distinguished Lecture

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Roberto D. Graglia was born in Turin, Italy, in 1955. He received the Laurea degree (*summa cum laude*) in electronic engineering from the Polytechnic of Turin in 1979, and the Ph.D. degree in electrical engineering and computer science from the University of Illinois at Chicago in 1983. From 1980 to 1981, he was a Research Engineer at CSELT, Italy, where he conducted research on microstrip circuits. From 1981 to 1983, he was a Teaching and Research Assistant at the University of Illinois at Chicago. From 1985 to 1992, he was a Researcher with the Italian National Research Council (CNR), where he supervised international research projects. In 1991 and 1993, he was Associate Visiting Professor at the University of Illinois at Chicago. In 1992, he joined the Department of Electronics, Polytechnic of Turin, as an Associate Professor. He has been a Professor of Electrical Engineering at that Department since 1999. He has authored over 150 publications in international scientific journals and symposia proceedings. His areas of interest comprise numerical methods for high- and low-frequency electromagnetics, theoretical and computational aspects of scattering and interactions with complex media, waveguides, antennas, electromagnetic compatibility, and low-frequency phenomena. He has organized and offered several short courses in these areas. Prof. Graglia has been a Member of the editorial board of ELECTROMAGNETICS since 1997. He is a past associate editor of the IEEE TRANSACTIONS ON ANTENNAS AND PROPAGATION and of the IEEE TRANSACTIONS ON ELECTROMAGNETIC COMPATIBILITY. He is currently an associate editor of the IEEE ANTENNAS AND WIRELESS PROPAGATION LETTERS. He was the Guest Editor of a special issue on Advanced Numerical Techniques in Electromagnetics for the IEEE TRANSACTIONS ON ANTENNAS AND PROPAGATION in March 1997. He has been Invited Convener at URSI General Assemblies for special sessions on Field and Waves (1996), Electromagnetic Metrology (1999), and Computational Electromagnetics (1999). He served the International Union of Radio Science (URSI) for the triennial International Symposia on Electromagnetic Theory as organizer of the Special Session on Electromagnetic Compatibility in 1998 and was the co-organizer of the special session on Numerical Methods in 2004. Dr. Graglia served the IEEE Antennas and Propagation Society as a member of AdCom, for the triennium 2006-2008. Since 1999, he has been the General Chairperson of the biennial International Conference on Electromagnetics in Advanced Applications (ICEAA), held in Turin. Prof. Graglia was elected Fellow of the IEEE in 1998 for his contributions in the application of numerical techniques in the studies of electromagnetic structures.