

IEEE ANTENNAS AND PROPAGATION DISTINGUISHED LECTURER SEMINAR**Multiscale Computational Electromagnetics
and Applications**

Speaker: Prof. Qing Huo Liu
(Duke University, USA)

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Location: Room GARDA – Polo Scientifico F. Ferrari – Povo

Note: The seminar will be held in English

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Electromagnetic sensing and system-level design problems are often multiscale and very challenging to solve. They remain a significant barrier to system-level sensing and design optimization for a foreseeable future. Such multiscale problems often contain three electrical scales, i.e., the fine scale (geometrical feature size much smaller than a wavelength), the coarse scale (geometrical feature size greater than a wavelength), and the intermediate scale between the two extremes. Most existing commercial solvers are based on single methodologies (such as finite element method or finite-difference time-domain method), and are unable to solve large multiscale problems. We will present our recent work in solving realistic multiscale system-level EM design simulation problems in time domain. The discontinuous Galerkin method is used as the fundamental framework for interfacing multiple scales with finite-element method, spectral element method, and finite difference method. Numerical results show significant advantages of the multiscale method.

• About the Speaker

Qing Huo Liu received his B.S. and M.S. degrees in physics from Xiamen University in 1983 and 1986, respectively, and Ph.D. degree in electrical engineering from the University of Illinois at Urbana-Champaign in 1989. His research interests include computational electromagnetics and acoustics, and their applications in inverse problems, geophysics, nanophotonics, and biomedical imaging. He has published over 230 refereed journal papers and 300 conference papers in conference proceedings. His H index is 42 and has been cited over 7000 times (Google Scholar). He was with the Electromagnetics Laboratory at the University of Illinois at Urbana-Champaign as a Research Assistant from September 1986 to December 1988, and as a Postdoctoral Research Associate from January 1989 to February 1990. He was a Research Scientist and Program Leader with Schlumberger-Doll Research, Ridgefield, CT from 1990 to 1995. From 1996 to May 1999 he was an Associate Professor with New Mexico State University. Since June 1999 he has been with Duke University where he is now a Professor of Electrical and Computer Engineering.

Dr. Liu is a Fellow of the IEEE, a Fellow of the Acoustical Society of America. Currently he serves as the Deputy Editor in Chief of Progress in Electromagnetics Research, an Associate Editor for IEEE Transactions on Geoscience and Remote Sensing, and an Editor for the Journal of Computational Acoustics. He was recently a Guest Editor in Chief of the Proceedings of the IEEE for a 2013 special issue on large-scale electromagnetics computation and applications. He received the 1996 Presidential Early Career Award for Scientists and Engineers (PECASE) from the White House, the 1996 Early Career Research Award from the Environmental Protection Agency, and the 1997 CAREER Award from the National Science Foundation.