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Academic Participants and Contributions



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Stochastic Modeling for High-Speed Interconnect Design

Hardware designers nowadays need to be fully aware of all high-frequency phenomena that cause signal integrity (SI) issues. Moreover, adverse effects are also induced by further miniaturization, as manufacturing tolerances lead to undesired geometrical and material parameter variability. Therefore, to reach their stringent design specifications, engineers have to rely on efficient modeling methods that accurately capture all high-frequency effects and quantify parameter uncertainty.

This talk explains and abundantly illustrates state-of-the-art uncertainty quantification techniques that are based on Polynomial Chaos expansions and Machine Learning approaches. Comparisons on the prediction of frequency- and time-domain responses are discussed, demonstrating the appositeness of the novel stochastic modeling methods for future SI-aware design of high-speed interconnects and circuits.

Dries Vande Ginste is an Associate Professor at the Department of Information Technology, Ghent University and a Guest Professor at imec, Belgium. In June and July 2004, he was a Visiting Scientist at the Department of Electrical and Computer Engineering, University of Illinois at Urbana-Champaign (UIUC), IL, USA. From September to November 2011, he was a Visiting Professor at the EMC Group, Dipartimento di Elettronica, Politecnico di Torino, Italy. He has authored or co-authored over 200 papers in international journals and in conference proceedings. His research interests include electromagnetic compatibility, signal and power integrity, computational electromagnetics, and antenna design. He was awarded the International Union of Radio Science (URSI) Young Scientist Award at the 2011 URSI General Assembly and Scientific Symposium and received multiple Best Paper Awards at several symposiums. He served as the chair of the 2014 IEEE Workshop on Signal and Power Integrity. He is a Senior Member of the IEEE.