

Industry-Academic Forum on EMC 2020

Academic Participants and Contributions



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Behavioral Modeling in EMC - Quo Vadis?

The last two decades brought dramatic advancements in the field of modeling and simulation of fields, circuits, and their interaction. In this setting, a major role was and is being played by the so-called macromodeling or Model Order Reduction (MOR) approaches. These techniques automatically construct compact models of possibly very complex systems, enabling system-level analysis and design via numerical simulation flows, with high accuracy and at a small computational cost. Macromodeling techniques are now mature and implemented in modern CAD suites. It is then time to exploit the base algorithms and scale them up to attack problems that were not easily solvable up to only few years ago. This talk will first review the basics of behavioral modeling as applied to EMC, Signal and Power Integrity. Then, a few focus challenges will be reviewed, with emphasis on multivariate possibly high-dimensional surrogate modeling for fast design optimization, and fast simulation of massively nonlinearly loaded electromagnetic structures.

Stefano Grivet-Talocia is a Full Professor of electrical engineering with the Politecnico di Torino. From 1994 to 1996, he was with the NASA/Goddard Space Flight Center, Greenbelt, MD, USA. He co-founded the academic spinoff company IdemWorks in 2007, where he served as the President until its acquisition by CST in 2016. He has authored over 150 journal and conference papers. His current research interests include passive macromodeling of lumped and distributed interconnect structures, model-order reduction, modeling and simulation of fields, circuits, and their interaction, wavelets, time-frequency transforms, and their applications. He received the IBM Shared University Research Award in 2007, 2008, and 2009. He was General Chair of the 20th and 21st IEEE Workshops on Signal and Power Integrity. He is an Associate Editor of IEEE TRANS. on CPMT. He is a Fellow of the IEEE.