IEEE EMCS Distinguished Lecture

Demystifying Signal Integrity in High-Speed Designs

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Abstract: With the increasing demands for higher signal speeds coupled with the need for decreasing feature sizes, signal integrity effects such as delay, distortion, reflections, crosstalk, ground bounce and electromagnetic interference have become the dominant factors limiting the performance of high-speed systems. These effects can be diverse and can seriously impact the design performance at all hierarchical levels including integrated circuits, printed circuit boards, multi-chip modules and backplanes. If not considered during the design stage, signal integrity effects can cause failed designs. Since extra iterations in the design cycle are costly, accurate prediction of these effects is a necessity in high-speed designs. Consequently, preserving signal integrity has become one of the most challenging tasks facing designers of modern multifunction and miniature electronic circuits and systems. This talk provides a comprehensive approach for understanding the multidisciplinary problem of signal integrity: issues/modeling/analysis in high-speed designs.

Bio: Prof. Ram Achar received the B. Eng. degree in electronics engineering from Bangalore University, India in 1990, M. Eng. degree in micro-electronics from Birla Institute of Technology and Science, Pilani, India in 1992 and the Ph.D. degree from Carleton University in 1998. Dr. Achar currently is a professor in the department of electronics engineering at Carleton University. Prior to joining Carleton university faculty (2000), he served in various capacities in leading research labs, including T. J. Watson Research Center, IBM, New York (1995), Larsen and Toubro Engineers Ltd., Mysore (1992), Central Electronics Engineering Research Institute, Pilani, India (1992) and Indian Institute of Science, Bangalore, India (1990). His research interests include signal/power integrity analysis, EMC/EMI analysis, circuit simulation, parallel and numerical algorithms and mixed-domain analysis.

Dr. Achar has published extensively in international transactions/conferences, he and and his students have received several prestigious awards, including Carleton university research achievement awards (2010 & 2004), NSERC (Natural Science and Engineering Research Council) doctoral medal (2000, 2010), IEEE best transactions paper awards (TAdvp:2007 and T-CPMT: 2013). Prof. Achar currently serves as the Distinguished Lecturer of IEEE EMC Society, General Chair for HPCPS-2016 and General Co-chair of SIPI-2016 and on the executive/steering/technical-program committees of several leading IEEE international conferences, such as SIPI, EPEPS and EDAPS.