



THE COMPUTER ENGINEERING RESEARCH CENTER

THE VLSI SEMINAR SERIES

Dr. Dennis Sylvester

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Circuit Design Advances for Wireless Sensing Applications

This talk describes new integrated circuit building blocks for emerging wireless sensing applications, particularly those where volume, and therefore power consumption, constraints are orders of magnitude below current state of the art. Developments in sub-nW timekeeping circuits are described, along with extremely low leakage memories and efficient DC-DC voltage conversion circuits at μA -level current loads. Taken together, these circuit design advances point to a vision of true mm^3 low-cost sensing nodes with hybrid power sources, i.e., scavenged + microbattery, providing long lifetimes and reliable operation.

Biography:

Dennis Sylvester received his Ph.D. in electrical engineering from the University of California, Berkeley. His dissertation research was recognized with the David J. Sakrison Memorial Prize as the most outstanding research in the UC-Berkeley EECS department. He is now an Associate Professor of Electrical Engineering and Computer Science at the University of Michigan, Ann Arbor. He previously held research staff positions in the Advanced Technology Group of Synopsys, Mountain View, CA, Hewlett-Packard Laboratories in Palo Alto, CA, and a visiting professorship in Electrical and Computer Engineering at the National University of Singapore. He has published numerous articles along with one book and several book chapters in his field of research, which includes low-power circuit design and design automation techniques, design-for-manufacturability, and interconnect modeling. He also serves as a consultant and technical advisory board member for several electronic design automation and semiconductor firms in these areas. Dr. Sylvester received an NSF CAREER award, the Beatrice Winner Award at ISSCC, an IBM Faculty Award, an SRC Inventor Recognition Award, and several best paper awards and nominations. He is the recipient of the ACM SIGDA Outstanding New Faculty Award and the University of Michigan Henry Russel Award for distinguished scholarship. He has served on the technical program committee of numerous design automation and circuit design conferences, the steering committee of the ACM/IEEE International Symposium on Physical Design, and was general chair for the 2005 ACM/IEEE Workshop on Timing Issues in the Synthesis and Specification of Digital Systems (TAU). He is currently an Associate Editor for IEEE Transactions on CAD and previously served as Associate Editor for IEEE Transactions on VLSI Systems. He is a senior member of IEEE and a member of ACM and Eta Kappa Nu.

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