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THE VLSI SEMINAR SERIES

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IBM Research

Self-consistent Analysis of Chip Power, Voltage and Temperature

Abstract

The state of art devices dissipate significant leakage power and operate under voltage and temperature variations. This resulted in performance limitations for high-performance microprocessors and other ASIC designs. Frequency is no longer the single performance parameter, as the temperature and power are more important than ever. Accurate analysis of each performance parameter is individually studied by many researchers and efficient techniques to analyze each problem have been developed. What is also more important is the consistent solution of power, voltage and temperature analysis since all these performance metrics are significantly dependent on each other. In this talk, we will revise efficient techniques to address each analysis problem for full-chip level, and formulate solutions to provide consistency between these analysis.

Biography

Emrah Acar received the B.S. and M.S. degrees in electrical engineering from Bilkent University, Turkey in 1995 and 1997, respectively. He received his Ph.D. degree in electrical and computer engineering from Carnegie Mellon University, Pittsburgh, PA in 2001 under the supervision of Prof. Larry Pileggi. While pursuing his Ph.D. study, he interned at Strategic CAD Labs at Intel, Hillsboro, Oregon, Compaq Alpha Design Center in Shrewsbury, MA, and IBM Austin Research Laboratory in Austin, TX. He is currently a research staff member at IBM Austin Research Laboratory. He is the lead of the Leakage Avoidance and Analysis (LAVA) project which embodies tools and techniques to analyze and mitigate leakage power for high-performance ICs. His research interests include circuit simulation, timing analysis, low-power design, and statistical analysis.

Wednesday, February, 21, 2007, ACES 2.402, 5 pm
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