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# Statistical Analysis and Design of Digital Integrated Circuits

## edaForum05 Presentation

### Technical Session II

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### Statistical Analysis and Design of Digital Integrated Circuits

#### Abstract

Proportionately increasing variability in digital integrated circuits has a major impact on performance characteristics such as frequency and leakage power. Variability will have a profound impact on design methodology, with the changes occurring in three main steps.

In the first phase, statistical treatment of variability will help to make design more efficient, coverage of the process space more thorough and will reduce pessimism inherent in corner or case-based analysis.

In the second phase, design robustness will be actively measured and targeted during the design methodology.

In the final phase, adaptive circuits whose behavior constantly reacts to environmental, fatigue, manufacturing and across-chip variations will be built. Such adaptive circuits will be synthesized and verified in the future by a full suite of probabilistic design tools.

#### Biography



**Chandu Visweswariah Manager, Circuit & Interconnect Analysis IBM Thomas J. Watson Research Center**

He received his Bachelor of Technology degree from the Indian Institute of Technology in Chennai, India, in 1985, and his M.S. and Ph.D. degrees from Carnegie Mellon University in 1986 and 1989, respectively. Since then, he has been a Research Staff Member at the IBM Thomas J. Watson Research Center in Yorktown Heights, NY, where he now manages a circuit and interconnect analysis group.

Chandu has developed several circuit simulation, optimization and statistical timing electronic design automation (EDA) tools which have contributed significantly to several generations of IBM's microprocessors. He is the author or co-author of one book and 50 technical papers; he holds 4 patents with 14 more pending approval. Chandu won IBM's highest technical award, the Corporate Award, in 2003, in addition to two IBM Outstanding Technical Achievement Awards and two Best Paper awards. He has served on the technical program committee of several international conferences. In 2002, he was a visiting faculty member at the Eindhoven University of Technology in the Netherlands. He is a Fellow of the IEEE.

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