

A Top-Down Look at Bottom-Up Electronics

Mark Lundstrom

Purdue University
465 Northwestern Avenue
West Lafayette, IN 47907-2035, USA
(765) 494-3515 (Fax: 6441) lundstro@purdue.edu

This talk will examine CMOS technology at the scaling limit and the role that new, molecular devices may play in future electronics systems. Advanced simulation techniques that capture quantum effects and atomistic structure allow realistic projections of ultimate CMOS. The same techniques allow us to explore unconventional devices such as carbon nanotube FETs, two-terminal molecular devices, and spintronic devices. The role of such devices in future heterogeneous systems will be considered. The talk will conclude with some general thoughts on the important role of the VLSI design community for electronics beyond the gigascale.