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## Circuit Architectures for Nanoscale Electronics

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### Abstract

The International Technology Roadmap for Semiconductors (ITRS) has identified several candidates of emerging device and circuit technologies. In this talk an overview of these emerging nanoscale technologies and their use in nanoelectronic circuit architectures is presented. Specifically, circuit architectures will be discussed that are based on resonant-tunneling (RTD) and single-electron (SET) devices, carbon nanotube transistors, molecular electronic structures, quantum-dot cellular automata (QCA), and cellular neural/nonlinear networks (CNN). Particular emphasis will be placed on circuit architectures based on direct physical (electrical or magnetic) interactions between neighboring devices to provide local interconnectivity.

### Curriculum Vitae



Wolfgang Porod currently is Frank M. Freimann Professor of Electrical Engineering at the University of Notre Dame, Indiana, USA. He received his Diplom (M.S.) and Ph.D. degrees from the University of Graz, Austria, in 1979 and 1981, respectively. After appointments as a postdoctoral fellow at Colorado State University and as a senior research analyst at Arizona State University, he joined the University of Notre Dame in 1986. He now serves as the Director of Notre Dame

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