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Nota di contenuto	Cover; Title Page; Copyright Page; CONTENTS; Preface; I INNOVATIONS IN ELECTRONICS AND SYSTEMS; Technology Innovation, Reshaping the Microelectronics Industry; Challenges and Limits for Very Low Energy Computation; Getting Rid of the DRAM Capacitor; Physics and Design of Nanoscale Field Effect Diodes for Memory and ESD Protection Applications; Sharp-Switching CMOS-Compatible Devices with High Current Drive; Magnetic Tunnel Junctions with a Composite Free Layer: A New Concept for Future Universal Memory; Silicon Carbide High Temperature Electronics - Is This Rocket Science? Microchip Post-Processing: There is Plenty of Room at the TopEUV Lithography: Today and Tomorrow; Manufacturability and Nanoelectronic Performance; II OPTOELECTRONICS IN THE NANO AGE; Ultrafast Nanophotonic Devices For Optical Interconnects; Will Optical Communications Meet the Challenges of the Future?; Optical Antennae for Optoelectronics: Impacts, Promises, and Limitations; Spin Modulation: Teaching Lasers New Tricks; III HARVESTING ENERGY FROM THE SUN AND THE ENVIRONMENT; Silicon Photovoltaics: Accelerating to Grid Parity

Two- and Three-Dimensional Numerical Simulation of Advanced Silicon Solar Cells Mechanical Energy Harvesting with Piezoelectric Nanostructures; Great Expectations for Autonomous Systems; Charged Quantum Dots for Photovoltaic Conversion and IR Sensing; Active Optomechanical Resonators; IV PHYSICS FRONTIERS; State of the Art and Prospects for Quantum Computing; Wireless, Implantable Neuroprosthesis: Applying Advanced Technology to Untether the Mind; Correlated Electrons: A Platform for Solid State Devices; Graphene-Based Integrated Electronic, Photonic and Spintronic Circuit Luttinger Liquid Behavior of Long GaAs Quantum Wires Toward Spin Electronic Devices Based on Semiconductor Nanowires; An Alternative Path for the Fabrication of Self-Assembled III-Nitride Nanowires; In As Nanowires with Surface States as Building Blocks for Tube-Like Electrical Sensing Transistors; Levy Flight of Photoexcited Minority Carriers in Moderately Doped Semiconductors: Theory and Observation; Terahertz Plasma Oscillations in Field Effect Transistors: Main Ideas and Experimental Facts; INDEX

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Sommario/riassunto

Leaders in the field predict the future of the microelectronics industry This seventh volume of Future Trends in Microelectronics summarizes and synthesizes the latest high-level scientific discussions to emerge from the Future Trends in Microelectronics international workshop, which has occurred every three years since 1995. It covers the full scope of cutting-edge topics in microelectronics, from new physical principles (quantum computing, correlated electrons), to new materials (piezoelectric nanostructures, terahertz plasmas), to emerging device technologies

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