1. Record Nr. UNINA9910886064403321 Autore Singh Sangeeta Titolo Beyond Si-Based CMOS Devices: Materials to Architecture // edited by Sangeeta Singh, Shashi Kant Sharma, Durgesh Nandan Singapore:,: Springer Nature Singapore:,: Imprint: Springer,, 2024 Pubbl/distr/stampa **ISBN** 981-9746-23-X Edizione [1st ed. 2024.] Descrizione fisica 1 online resource (331 pages) Springer Tracts in Electrical and Electronics Engineering, , 2731-4219 Collana Altri autori (Persone) SharmaShashi Kant NandanDurgesh Disciplina 621.3815 Soggetti Electronic circuits Microprocessors Computer architecture Materials Electronic Circuits and Systems **Processor Architectures** Materials for Devices Lingua di pubblicazione Inglese **Formato** Materiale a stampa Livello bibliografico Monografia Nota di contenuto Beyond Si Based CMOS Devices: Needs, Opportunities and Challenges -- Nanowire Based Si CMOS Devices -- Carbon Nanotube FETS: An Alternative For Beyond Si Devices -- Graphene Based Devices for Beyond CMOS Applications -- Other Potential 2-D Materials for CMOS Applications -- Heterogenous Integration of 2D Materials with Silicon-Complementary Metal Oxide Semiconductor (Si-CMOS) Devices --TFET: From Material to Device Perspective -- Negative Capacitance Field Effect Transistor (NCFET): Strong Beyond CMOS Device --Nanoelectromechanical Switches: As a Steep switching Device -- The Device-Circuit Co-Design Perspective on Phase-Transition and Hybrid Phase-Transition (Hyper-) FETs, Phase-FETs, and MOSFET -- Feedback Field-Effect Transistors/ Zero Subthreshold Swing and Zero Impact Ionization FET -- Resistive-Gate Field-Effect Transistor: A Potential Steep-Slope Device -- Spin Field-Effect Transistor: For Steep Switching

This book focuses on summarizing recent research trends for new

Behaviour.

Sommario/riassunto

beyond-CMOS and beyond-silicon devices, circuits, and architectures for computing. It reports the recent achievements in this field from leading research trends around the globe, specifically focusing on nanoscale beyond silicon materials and devices, functional nanomaterials, nanoscale devices, beyond-CMOS devices materials, and their opportunities and challenges. The book is devoted to the fast-evolving field of modern material science and nanoelectronics, particularly to the physics and technology of functional nanomaterials and devices.