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Altri autori (Persone)	FominVladimir M
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Nota di contenuto	Preface -- Quantum Ring: A Unique Playground for the Quantum-Mechanical Paradigm -- Fabrication, Characterization and Physical Properties -- Growth and Spectroscopy of Semiconductor Quantum Rings -- Quantum Rings: Fabrication and Optical Properties -- Self-organized Quantum Rings: Physical Characterization and Theoretical Modeling -- Scanning-probe Electronic Imaging of Lithographically Patterned Quantum Rings -- Self-organized Formation and XSTM-Characterization of GaSb/GaAs Quantum Rings -- Self-assembled Semiconductor Quantum Rings Complexes by Droplet Epitaxy: Growth and Physical Properties -- Aharonov-Bohm Effect for Excitons -- New Versions of the Aharonov-Bohm Effect in Quantum Rings -- Aharonov-Bohm Effect for Neutral Exctions in Quantum Rings -- Optical

Aharonov-Bohm Effect in Type-II Quantum Dots -- Theory -- Strained Quantum Rings -- Theoretical Modeling of Electronic and Optical Properties of Semiconductor Quantum Rings -- Coulomb Interaction in Finite-Width Quantum Rings. Differential Geometry Applied to Rings and Möbius Nanostructures -- Hole Mixing in Semiconductor Quantum Rings -- Engineering of Electron States and Spin Relaxation in Quantum Rings and Quantum Dot-Ring Nanostructures.

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Sommario/riassunto

This book deals with a new class of materials, quantum rings. Innovative recent advances in experimental and theoretical physics of quantum rings are based on the most advanced state-of-the-art fabrication and characterization techniques as well as theoretical methods. The experimental efforts allow to obtain a new class of semiconductor quantum rings formed by capping self-organized quantum dots grown by molecular beam epitaxy. Novel optical and magnetic properties of quantum rings are associated with non-trivial topologies at the nanoscale. An adequate characterization of quantum rings is possible on the basis of modern characterization methods of nanostructures, such as Scanning Tunneling Microscopy. A high level of complexity is demonstrated to be needed for a dedicated theoretical model to adequately represent the specific features of quantum rings. The findings presented in this book contribute to develop low-cost high-performance electronic, spintronic, optoelectronic and information processing devices based on quantum rings. .

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