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Nota di bibliografia	Includes bibliographical references at the end of each chapters.
Nota di contenuto	Notes on Equivariant Localization -- An Introduction to Spin Foam Models of BF Theory and Quantum Gravity -- T-Duality and the Gravitational Description of Gauge Theories -- Noncommutative Geometry and Basic Physics -- An Introduction to Noncommutative Geometry -- Geometric Properties of Transport in Quantum Hall Systems -- q-Deformed Heisenberg Algebras -- Quantum Gravity with Matter Fields in Two Dimensions -- A Quantum Minkowski Space-Time -- Supersymmetry and Nonperturbative Aspects in Quantum Cosmology -- Noncommutative Supergeometry of Graded Matrix Algebras -- Duals for Nonabelian Lattice Gauge Theories -- Absolute Conservation Law for Black Holes -- Double Numbers and Two Dimensional Anomaly Free Field Models -- A Global Path Integral for

Yang-Mills Theory -- Anyonic Solutions to the Thirring Model -- Twisting of Quantum Differentials -- Wigner Solid and Laughlin Liquid of Bose Condensed Charge-Vortex Composites -- The Modular Closure of Braided Tensor Categories -- Clifford Algebra as a Useful Language for Geometry and Physics -- Fields on Noncommutative Manifolds -- Geometry of 2-Fold Degenerated 2-Level System -- On q-Deformations and Dunkl-Deformations of Harmonic Oscillators -- Quantum Field Theory in Non-globally Hyperbolic Space-Times -- Steps Beyond the Standard Model in Noncommutative Geometry -- Vacuum Polarization Effects in the Background of Nontrivial Topology -- F-Theory and Toric Geometry -- Actions for Duality-Symmetric Fields -- Unitary Representations of the Quantum Anti-de Sitter Group at Roots of Unity and Elementary Particles -- The Limits of D-Brane Action.

Sommario/riassunto

In modern mathematical physics, classical together with quantum, geometrical and functional analytic methods are used simultaneously. Non-commutative geometry in particular is becoming a useful tool in quantum field theories. This book, aimed at advanced students and researchers, provides an introduction to these ideas. Researchers will benefit particularly from the extensive survey articles on models relating to quantum gravity, string theory, and non-commutative geometry, as well as Connes' approach to the standard model.