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Collana	Lecture Notes in Physics, , 0075-8450 ; ; 645
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Soggetti	Magnetism Magnetic materials Solid state physics Spectroscopy Microscopy Superconductivity Superconductors Magnetism, Magnetic Materials Solid State Physics Spectroscopy and Microscopy Strongly Correlated Systems, Superconductivity
Lingua di pubblicazione	Inglese
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Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	One-dimensional magnetism -- Quantum magnetism in two dimensions: From semi-classical Néel order to magnetic disorder -- Molecular magnetism -- Spin wave analysis of heisenberg magnets in restricted geometries -- Simulations of pure and doped low-dimensional spin-1/2 gapped systems -- Field-theoretical methods in quantum magnetism -- The coupled cluster method applied to quantum magnetism -- Integrability of quantum chains: Theory and applications to the spin-1/2 XXZ chain -- Quantum phases and phase transitions of Mott insulators -- Spin—Orbit—Topology, a triptych.
Sommario/riassunto	The investigation of magnetic systems where quantum effects play a dominant role has become a very active branch of solid-state-physics

research in its own right. The first three chapters of the "Quantum Magnetism" survey conceptual problems and provide insights into the classes of systems considered, namely one-dimensional, two-dimensional and molecular magnets. The following chapters introduce the methods used in the field of quantum magnetism, including spin wave analysis, exact diagonalization, quantum field theory, coupled cluster methods and the Bethe ansatz. The book closes with a chapter on quantum phase transitions and a contribution that puts the wealth of phenomena into the context of experimental solid-state physics. Closing a gap in the literature, this volume is intended both as an introductory text at postgraduate level and as a modern, comprehensive reference for researchers in the field.