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Nota di contenuto	Part I: From Single Spins to Complex Spin Textures -- Magnetic Spectroscopy of Individual Atoms, Chains and Nanostructures -- Scanning Tunneling Spectroscopies of Magnetic Atoms, Clusters, and Molecules -- Electronic Structure and Magnetism of Correlated Nanosystems -- Local Physical Properties of Magnetic Molecules -- Magnetic Properties of One-Dimensional Stacked Metal Complexes -- Designing and Understanding Building Blocks for Molecular Spintronics -- Magnetic Properties of Small, Deposited 3d Transition Metal and Alloy Clusters -- Non-collinear Magnetism Studied with Spin-polarized Scanning Tunneling Microscopy -- Theory of Magnetic Ordering at the Nanoscale -- Magnetism of Nanostructures on Metallic Substrates -- Part II: Spin Dynamics and Transport in Nanostructures --

Magnetization Dynamics on the Atomic Scale -- Magnetic Behavior of Single Nanostructures and their Mutual Interactions in Small Ensembles -- Fluctuations and Dynamics of Magnetic Nanoparticles -- Picosecond Magnetization Dynamics of Nanostructures Imaged with Pump–probe Techniques in the Visible and Soft X-ray Spectral Range -- Magnetic Antivortices -- Nonequilibrium Quantum Dynamics of Current-driven Magnetic Domain Walls and Skyrmions -- Imaging the Interaction of Electrical Currents with Magnetization Distributions -- Electron Transport in Ferromagnetic Nanostructures.

Sommario/riassunto

This book provides a comprehensive overview of the fascinating recent developments in atomic- and nanoscale magnetism, including the physics of individual magnetic adatoms and single spins, the synthesis of molecular magnets for spintronic applications, and the magnetic properties of small clusters as well as non-collinear spin textures, such as spin spirals and magnetic skyrmions in ultrathin films and nanostructures. Starting from the level of atomic-scale magnetic interactions, the book addresses the emergence of many-body states in quantum magnetism and complex spin states resulting from the competition of such interactions, both experimentally and theoretically. It also introduces novel microscopic and spectroscopic techniques to reveal the exciting physics of magnetic adatom arrays and nanostructures at ultimate spatial and temporal resolution and demonstrates their applications using various insightful examples. The book is intended for researchers and graduate students interested in recent developments of one of the most fascinating fields of condensed matter physics.