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Nota di contenuto	Two-photon method for metrology in hydrogen -- High precision atomic spectroscopy of muonium and simple muonic atoms -- The muonium atom as a probe of physics beyond the standard model -- Can atoms trapped in solid helium be used to search for physics beyond the standard model? -- g-Factors of subatomic particles -- Laser spectroscopy of metastable antiprotonic helium atomcules -- Polarized, compressed 3He-gas and its applications -- Medical NMR sensing with laser-polarized 3He and 129Xe -- Test of special relativity in a heavy ion storage ring -- Resonance fluorescence of a single ion -- Resonance raman studies of the relaxation of photoexcited

molecules in solution on the picosecond timescale -- Four-quantum RF-resonance in the ground state of an alkaline atom -- Hard highly directional X-radiation emitted by a charged particle moving in a carbon nanotube -- Quasiclassical approximation in the theory of scattering of polarized atoms -- Ion beam inertial fusion -- Spin-echo experiments with neutrons and with atomic beams -- New generation of light sources for applications in spectroscopy -- Remote sensing of the environment using laser radar techniques -- Applied laser spectroscopy in combustion devices -- The surface of liquid helium - an unusual substrate for unusual coulomb systems -- Aspects of laser-assisted scanning tunneling microscopy of thin organic layers -- Optical spectroscopy of metal clusters -- New concepts for information storage based on color centers -- Excitons and radiation damage in alkali halides -- Polarization of negative muons implanted in the fullerene C60: Speculations about a null result -- Positronium in condensed matter studied with spin-polarized positrons -- Light-induced liberation of atoms and molecules from solid surfaces -- On the shoulders of giants — Early history of hyperfine structure spectroscopy. For gisbert zu putlitz.

Sommario/riassunto

Atomic physics has played a central role in the development of modern physics. Progress was based on newly invented scientific methods and experimental tools and today these techniques are successfully employed in a wide variety of highly active areas in modern research, extending from investigations of most fundamental interactions in physics to experiments related to topics in applied sciences and technical aspects. With steadily increasing importance they are found in areas well outside of classical atomic physics in fields such as nuclear and particle physics, metrology, physics of condensed matter and surfaces, physical chemistry, chemistry, medicine and environmental research. This book gives a thorough survey of the methods and techniques in key experiments of interdisciplinary research.