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Nota di contenuto	Evolution of the Universe -- Quantum Gravity and Fundamental Constants -- Physics and Metrology -- Search for New Physics with Atomic Clocks -- Cold Atom Clocks and Fundamental Tests -- 30 Years of Testing the PPN parameters -- Cryogenic Optical Resonators -- Absorption Spectra -- Variability of the Fine-Structure Constant -- Millesecond Pulsars? Tools of Fundamental Physics -- Constants, Units and Standards -- Time Varying Fundamental Constants, Extra Dimensions and the Renormalization Group -- A Time Dependence of the QCD Scale -- Towards More Sensitive Measurements with Optical Clocks -- Search for Variations of Fundamental Constants using Precision Spectroscopy of Atomic Hydrogen -- A New Era in Precision Molecular Spectroscopy -- Yb+ Optical Frequence Standard -- In+ Trapped Ion Optical Frequency Standard -- An Optical Frequency Standard with Cold Calcium Atoms -- Atom Optics: A Versatile Tool for New Quantum Sensors in Space.
Sommario/riassunto	In 1937 the question of a possible temporal variation of the fundamental constants was raised by Paul Dirac in his "large number

hypothesis." Today it appears in the context of the search for a unified theory of the fundamental interactions. It touches both fundamental and applied physics, as the postulated unalterability of the constants is the foundation for modern metrology. The book presents reviews written by leading experts in the field. Focussing on the question of variations of the fundamental "constants" in time or space, the chapters cover the theoretical framework in which variations are expected and the search for variations of quantities such as the fine-structure constant, the electron/proton mass ratio, g-factors of proton and neutron etc. in astrophysical and geophysical observations and in precision experiments with atomic clocks and frequency standards.