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Nota di contenuto	Frontmatter -- Contents -- Introduction -- Part I: Dissipative geometry and general relativity theory -- 1. Pseudo-Riemannian geometry and general relativity -- 2. Dynamics of universe models -- 3. Anisotropic and homogeneous universe models -- 4. Metric waves in a nonstationary universe and dissipative oscillator -- 5. Bosonic and fermionic models of a Friedman-Robertson-Walker universe -- 6. Time dependent constants in an oscillatory universe -- Part II: Variational principle for time dependent oscillations and dissipations -- 7. Lagrangian and Hamilton descriptions -- 8. Damped oscillator: classical and quantum theory -- 9. Sturm-Liouville problem as a damped oscillator with time dependent damping and frequency -- 10. Riccati representation of time dependent damped oscillators -- 11. Quantization of the harmonic oscillator with time dependent parameters -- Bibliography -- Index
Sommario/riassunto	The book employs oscillatory dynamical systems to represent the Universe mathematically via constructing classical and quantum theory of damped oscillators. It further discusses isotropic and homogeneous metrics in the Friedman-Robertson-Walker Universe and shows their equivalence to non-stationary oscillators. The wide class of exactly

solvable damped oscillator models with variable parameters is associated with classical special functions of mathematical physics. Combining principles with observations in an easy to follow way, it inspires further thinking for mathematicians and physicists.

ContentsPart I: Dissipative geometry and general relativity

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