

1. Record Nr.	UNINA9910789409903321
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Titolo	Fractional calculus [[electronic resource] ] : an introduction for physicists // Richard Herrmann
Pubbl/distr/stampa	Singapore ; ; Hackensack, N.J., : World Scientific, c2011
ISBN	1-283-14870-6 9786613148704 981-4340-25-1
Descrizione fisica	1 online resource (274 p.)
Disciplina	515.83
Soggetti	Fractional calculus
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references (p. 243-256) and index.
Nota di contenuto	Foreword; Acknowledgments; Contents; 1. Introduction; 2. Functions; 3. The Fractional Derivative; 4. Friction Forces; 5. Fractional Calculus; 6. The Fractional Harmonic Oscillator; 7. Wave Equations and Parity; 8. Nonlocality and Memory Effects; 9. Quantum Mechanics; 10. Fractional Spin: a Property of Particles Described with the Fractional Schr odinger Equation; 11. Factorization; 12. Symmetries; 13. The Fractional Symmetric Rigid Rotor; 14. q-deformed Lie Algebras and Fractional Calculus; 15. Fractional Spectroscopy of Hadrons; 16. Higher Dimensional Fractional Rotation Groups 17. Fractors: Fractional Tensor Calculus 18. Fractional Fields; 19. Gauge Invariance in Fractional Field Theories; 20. Outlook; Bibliography; Index
Sommario/riassunto	Fractional calculus is undergoing rapidly and ongoing development. We can already recognize, that within its framework new concepts and strategies emerge, which lead to new challenging insights and surprising correlations between different branches of physics. This book is an invitation both to the interested student and the professional researcher. It presents a thorough introduction to the basics of fractional calculus and guides the reader directly to the current state-of-the-art physical interpretation. It is also devoted to the application of fractional calculus on physical problems, in t