1. Record Nr. UNINA9910484257903321

| | |
|---|---|
| Titolo | Numerical Solutions of Realistic Nonlinear Phenomena / / edited by J. A. Tenreiro Machado, Necati Özdemir, Dumitru Baleanu |
| Pubbl/distr/stampa | Cham : , : Springer International Publishing : , : Imprint : Springer, , 2020 |
| ISBN | 3-030-37141-7 |
| Edizione | [1st ed. 2020.] |
| Descrizione fisica | 1 online resource (VIII, 233 p. 36 illus., 26 illus. in color.) |
| Collana | Nonlinear Systems and Complexity, , 2196-0003 ; ; 31 |
| Disciplina | 510 |
| Soggetti | Mathematical physics<br>Dynamics<br>Nonlinear theories<br>Mathematics - Data processing<br>Nonlinear optics<br>Differential equations<br>Mathematical Physics<br>Applied Dynamical Systems<br>Computational Science and Engineering<br>Nonlinear Optics<br>Differential Equations |
| Lingua di pubblicazione | Inglese |
| Formato | Materiale a stampa |
| Livello bibliografico | Monografia |
| Nota di bibliografia | Includes bibliographical references and index. |
| Nota di contenuto | Chapter 1. Monotone iterative technique for non-autonomous semilinear differential equations with non-instantaneous impulses -- Chapter 2. An extrapolated Crank Nicholson VMS-POD method for Darcy Brinkman Equations -- Chapter 3. Comparison of Exact and Numerical Solutions for the Sharma-Tasso-Olver Equation -- Chapter 4. A Linear B–spline Approximation for a Class of Nonlinear Time and Space Fractional Partial Differential Equations -- Chapter 5. Escaping from Current Minimizer by Using an Auxiliary Function Smoothed by Bezier Curves -- Chapter 6. A modified Laguerre matrix approach for Burger-Fisher type nonlinear equations -- Chapter 7. Increasing the Effects of Auxiliary Function by Multiple Extrema in Global Optimization -- Chapter 8. A New Approach for the Solution of the Generalized Abel |

Integral Equation -- Chapter 9. NPSOG: A new hybrid method for unconstrained differentiable optimization -- Chapter 10. Detection of HIV-1 Protease Cleavage Sites via Hidden Markov Model and Physiochemical Properties of Aminoacids -- Chapter 11. A Numerical Approach for Variable Order Fractional Equations -- Chapter 12. Evolution of Plane Curves via Lie Symmetry Analysis in the Galilean Plane.

Sommario/riassunto

This collection covers new aspects of numerical methods in applied mathematics, engineering, and health sciences. It provides recent theoretical developments and new techniques based on optimization theory, partial differential equations (PDEs), mathematical modeling and fractional calculus that can be used to model and understand complex behavior in natural phenomena. Specific topics covered in detail include new numerical methods for nonlinear partial differential equations, global optimization, unconstrained optimization, detection of HIV- Protease, modelling with new fractional operators, analysis of biological models, and stochastic modelling. Presents new concepts to understand dynamical systems and develop modelling techniques Describes influence of fractional operators on modelling complex features of real-world problems Analyzes the epidemic of spreading models Introduces new hybrid methods for global and constrained optimization.