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Nota di contenuto	The Higgs Boson and the Higgs Field in Fractal Models of the Universe: Supermassive Black Holes, Relativistic Jets, Solar Coronal Holes, Active Microobjects -- Memory Cell Based on Qubit States and its Control in a Model Fractal Coupled Structure -- To Stochastic Resonance in Homopolar Dynamo -- Dynamic Localized Autonomous Chaotic Orbital Patterns from Rotation-Translation Sequences -- New Discrete Chaotic Cipher Key Generation for Digital Embedded Crypto-Systems -- A Survey on Chaos-Based Cryptosystems: Implementations and Applications -- Approximate Methods for Solving Hypersingular Integral Equations on Fractals -- Approximate Solution of Inverse Problems of Gravity Exploration on Fractals -- Exploring the Chaotic Nature of COVID-19 Pandemic: Limit Cycles and Time-Lag Around the World -- Detection of Early Warning Signals for Self-Organized Criticality in Cellular Automata -- Double Symmetry and Generalized Intermittency in Transitions to Chaos in Electroelastic Systems -- Optimality Principles for Solving Nonlinear Control Problems Under Uncertainty -- Piezo Spintronic Effect in DNA Molecular Chains -- The Atom, From a Mathematical-Physical Perspective -- Nonlinear Phenomena in the Dynamics of a Class of Rolling Pendulums: A Trigger of Coupled Singularities -- A Quantum Dynamical Map in the Creation

of Optimized Chaotic S-Boxes -- The Interaction of Memristor in Cellular Nonlinear Network for Image and Signal Processing -- The Turing Model and Discrete Limit Cycles with Eddy and Convection -- Cloud Electrification as a Source of Ignition for Hydrogen Lift-Gas Airships Disasters -- ‘Dubro’ Resophonic Guitar: Glissando Gestures -- On the Origin of the Universe Chaos or Cosmos? -- Maximum Lyapunov Exponent Calculation -- New Fractal Features for Textural Morphologic Analysis -- The Role of the Angular Momentum in Shaping Collective Effects -- Non-Autonomous Two Channel Chaotic Generator: Computer Modelling, Analysis and Practical Realization -- External Synchronization of Solitary States And Chimeras in Unidirectionally Coupled Neural Networks -- On a Cournot Duopoly Game with Relative Profit Maximization -- Multifractal Analysis of Bioenergy Transport in a Protein Nanomotor -- Forced Van Der Pol Oscillator Synchronization from the Bifurcation Theory Point of View -- Fractal Nanoparticles of Phase-Separating Solid Solutions: Nanoscale Effects on Phase Equilibria, Thermal Conductivity, Thermoelectric Performance -- Maximal Attractors in Nonideal Hydrodynamic Systems -- Universality of Boltzmann Statistical Mechanics, Thermodynamics, Quantum Mechanics, and Shannon Information Theory -- D-Entropy in Classical Mechanics -- Some Aspects of Rainbows and Black Hole Linked to Mandelbrot Set and Farey Diagram -- Sequences of PRN's from Algebraic Curves over the Ring Z_(P^M) -- Fractional Chaotic System Solutions and their Impact on Chaotic Behaviour -- Coupled Fitzhugh-Nagumo Type Neurons Driven by External Voltage Stimulation -- Demographic Dynamics of Inhomogeneous Economic Communities as an Institutional Trap. .

Sommario/riassunto

Gathering the proceedings of the 14th CHAOS2021 International Conference, this book highlights recent developments in nonlinear, dynamical and complex systems. The conference was intended to provide an essential forum for Scientists and Engineers to exchange ideas, methods, and techniques in the field of Nonlinear Dynamics, Chaos, Fractals and their applications in General Science and the Engineering Sciences. The respective chapters address key methods, empirical data and computer techniques, as well as major theoretical advances in the applied nonlinear field. Beyond showcasing the state of the art, the book will help academic and industrial researchers alike apply chaotic theory in their studies. Chapter "On the Origin of the Universe: Chaos or Cosmos" is available open access under a Creative Commons Attribution 4.0 International License via link.springer.com.