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Nota di contenuto	Dimensionality Reduction with Proper Symplectic Decomposition for Learning Hamiltonian Dynamics -- Aspects of Optimization in Domestic Drinking Water Purification Systems -- Parallel Cyclic Reduction of Bordered Almost Block Diagonal Matrices -- A Direct/Indirect Approach to Optimal Control Problems -- Metaplectic Gabor Frames of Wigner-Decomposable Distributions -- Identifying Dengue Hotspots in Baguio City, Philippines through Spatiotemporal Analysis -- Discontinuous Galerkin Schemes for Master Equations Modeling Open Quantum Systems -- The Scaling Behavior of High-Order Structure Functions for

a Turbulent Jet Induced by a Rotating Propeller -- Analysis of Computational Fluid Dynamics Approaches for the Development of Microfluidic Devices -- Extragradient Method For Monotone Variational Inequality in CAT(0) Spaces -- A Symbolic-Numerical Approach to Index Reduction and Solution of Differential-Algebraic Equations -- A MATLAB Code for Handling Efficiently Discontinuous BVPs -- Optimal Transport Flow Distribution and Construction of Wardrop Optimal Networks -- Optimizing the Reuse of Building Demolition Materials for Coastal Dunes Reestablishment -- A Simple Mathematical Solution to an Invariance Problem in Water Networks -- Scalability of Saharan Dust Outbreak Modelling with the Advanced Weather Research and Forecasting Model Coupled with Chemistry (WRF-Chem) -- Choosing Kernel Shape Parameters in Partition of Unity Methods by Univariate Global Optimization Techniques -- A Bayesian Approach for Simultaneously Radial Kernel Parameter Tuning in the Partition of Unity Method -- Application of Deep Learning for Wildfire Risk Management: Preliminary Results -- Node-Binded Communities for Interpolation on Graphs -- A Fast Algorithm for Numerical Differentiation from Scattered Data -- Preconditioning Strategies for RBF Interpolation -- An Alternative Nonlinear Diffusion Algorithm for Image Denoising and Deblurring -- Some Numerical Approaches for Bifurcation of Nonlinear Dynamic Systems -- The Effects of Different Mesh Sizes on a Cellular Automata-Based Hydrological Model -- Computation of the Confluent Hypergeometric Function $M(a,b,x)$ -- Multi-Objective Support Vector Machine Classification Algorithm for Estimation of the Potential Atmospheric Water Harvesting -- IoT and Artificial Intelligence Integration for a Stormwater Monitoring and Management System -- Optimization Method Development for Water Management of Green Roof Systems -- Weighted Finite Element Method and Body of Optimal Parameters for One Problem of the Fracture Mechanics -- A Shallow Water Model: Analytical and Numerical Study for Simulating the Coastline Evolution -- On the Division in the Computation of Binary BBP-Type Formulas for Mathematical Constants -- Numerical Analysis of Sedimentation Tanks Efficiency Using CFD Simulation -- A Probabilistic Note on the WY Representation of Householder QR -- Applying Machine Learning to Improve Weather Forecasting in a Mediterranean Area: Preliminary Experiments.

Sommario/riassunto

The three-volume set LNCS 14476-14478 constitutes the post conference proceedings of the 4th International Conference on Numerical Computations: Theory and Algorithms, NUMTA 2023, held in Pizzo Calabro, Italy, during June 14-20, 2023. The 45 full papers presented in this book together with 60 short papers were carefully reviewed and selected from 170 submissions. The papers focus on topics such as: continuous and discrete single- and multi-objective problems, local, global and large-scale optimization, classification in machine learning, optimal control, and applications; computational and applied mathematics (such as approximation theory, computational geometry, computational fluid dynamics, dynamical systems and differential equations, numerical algebra, etc.) and applications in engineering and science; numerical models, methods and software using traditional and emerging high-performance computational tools and paradigms (including the infinity and quantum computing) and their application in artificial intelligence and data science, bioinformatics, economics and management, engineering and technology, mathematical education, number theory and foundations of mathematics, etc.
