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Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Invited Papers -- An Implementation of a Coarse-fine Mesh Stabilized Schwarz Method for a Three-space Dimensional PDE-problem -- Mixed Finite Element Methods for the Navier–Stokes–Biot Model -- Preconditioning and Multilevel Methods -- Numerical Comparison of Block Preconditioners for Poroelasticity -- Two-dimensional Semi-linear Riesz Space Fractional Diffusion Equations in Convex Domains: GLT Spectral Analysis and Multigrid Solvers -- Continuation Newton Methods with Applications to Plasticity -- Fractures and Mixed

Dimensional Modeling: Discretizations, Solvers, and Methodology -- Mixed and Nitsche's Discretizations of Frictional Contact-mechanics in Fractured Porous Media -- Machine Learning and Model Order Reduction for Large Scale Predictive Simulations -- Towards Efficient SOT-assisted STT-MRAM Cell Switching Using Reinforcement Learning -- Machine Learning Algorithms for Parameter Identification for Reactive Flow in Porous Media -- Randomized Symplectic Model Order Reduction for Hamiltonian Systems -- Adaptive Localized Reduced Basis Methods for Large Scale PDE-constrained Optimization -- Application of Deep Kernel Models for Certified and Adaptive RB-ML-ROM Surrogate Modeling -- Fractional Differential Problems: Theoretical Aspects, Algorithms and Applications -- Parametric Analysis of Space-time Fractional Pennes Bioheat Model Using a Collocation Method Based on Radial Basis Functions and Chebyshev Polynomials -- Numerical Determination of Source from Point Observation in a Time-Fractional Boundary-Value Problem on Disjoint Intervals -- The Wright Function – Numerical Approximation and Hypergeometric Representation -- Study of Sparsification Schemes for the FEM Stiffness Matrix of Fractional Diffusion Problems -- Fractional Diffusion Problems with Reflecting Boundaries -- Variational Analysis and Optimal Control -- A Mean Field Model For Counter CBRN Threats -- A Sufficient Condition for a Discrete-Time Optimal Control Problem -- Stochastic Optimal Control and Numerical Methods in Economics and Finance -- Computation of the Unknown Time-Dependent Volatility of American Options from Integral Observations -- Tensor Methods for Big Data Analytics and Low-Rank Approximations of PDEs Solutions -- Efficient Solution of Stochastic Galerkin Matrix Equations via Reduced Basis and Tensor Train Approximation -- The Tensor-Train Mimetic Finite Difference Method For Three-dimensional Maxwell' s Wave Propagation Equations -- A Functional Tensor Train Library in RUST for Numerical Integration and Resolution of Partial Differential Equations -- Applications of Metaheuristics to Large-Scale Problems -- Solving the Mountain Car Problem Using Genetic Algorithms -- Ant Algorithm with Local Search Procedure for Multiple Knapsack Problem -- Variable Neighborhood Search inHamming Space -- An Improved Algorithm for Fredholm Integral Equations -- Optimization of the Standard Lattice Sequence for Multidimensional Integrals Regarding Large-Scale Finance Problems -- Circular Intuitionistic Fuzzy Knapsack Problem -- Large-Scale Models: Numerical Methods, Parallel Computations and Applications -- Clouds Formed by Thermals Arising and Evolving under the Influence of the Coriolis Force -- A Nonstandard Finite Difference Method for a General Epidemic Model -- Minimization of Energy Functionals via FEM: Implementation of hp-FEM -- Influence of the Grid Resolutions on the Computer Simulated Transport and Transformation Atmospheric Composition Processes over the Territory of Bulgaria -- Development of New High Performance Computer Architectures and Improvements in Danish Eulerian Model for Long Range Transport of Air Pollutants -- Evaluation of the Effects of the National Emission Reduction Strategies for Years 2020-2029 and after 2030 on the AQI on the Territory of Bulgaria -- Mathematical and Computational Modeling of a Nonlinear Elliptic Problem in Divergence Form -- Two Approaches for Identifying Epidemiological Parameters Illustrated with COVID-19 Data for Bulgaria -- Improved Stochastic Lattice Methods for Large-scale Air Pollution Model -- HPC and HPDA: Algorithms and Applications -- Parallel Solution of the Schrödinger-Poisson Equation on GPUs -- Anastylosis of Frescos – a Web Service in an HPC Environment -- A Resolvent Quasi-Monte Carlo Method for Estimating the Minimum Eigenvalues Using the Error Balancing --

Influence of the Grid Resolutions on the Computer Simulated Air Quality Indices over the Territory of Bulgaria -- Application of Active Subspaces for Model Reduction and Identification of Design Space -- EOCSim: A CloudSim-Based Simulator for Earth Observation Data Processing in Clouds -- About Methods of Vector Addition over FiniteFields Using Extended Vector Registers -- Grid Search Optimization of Novel SNN-ESN Classifier on a Supercomputer Platform -- Parallelisms of PG(3,4) with a Great Number of Regular Spreads -- Contributed Papers -- On Some Quadratic Eigenvalue Problems -- Numerical Determination of Time-dependent Volatility for American Option When the Optimal Exercise Boundary Is Known -- Exploring the Global Solution Space of a Simple Schrödinger-Poisson Problem.

Sommario/riassunto

This book constitutes the refereed proceedings of the 14th International Conference on Large-Scale Scientific Computations, LSSC 2023, held in Sozopol, Bulgaria, during June 5–9, 2023. The 49 full papers included in this book were carefully reviewed and selected from 61 submissions. They were organized in topical sections as follows: preconditioning and multilevel methods; fractures and mixed dimensional modeling: discretizations, solvers, and methodology; machine learning and model order reduction for large scale predictive simulations; fractional differential problems: theoretical aspects, algorithms and applications; variational analysis and optimal control; stochastic optimal control and numerical methods in economics and finance; tensor methods for big data analytics and low-rank approximations of PDEs solutions; applications of metaheuristics to large-scale problems; large-scale models: numerical methods, parallel computations and applications; HPC and HPDA: algorithms and applications.