

Friday, August 20

Plenary Session

Lecture Hall A	
08:30 – 09:15	Registration
	Chairperson: I. Dimov
09:15 – 09:30	Opening
09:30 – 10:10	Bl. Sendov, <i>New Conjectures in the Hausdorff Geometry of Polynomials</i> B-53
10:10 – 10:50	K. Sabelfeld, <i>Stochastic Algorithms in Linear Algebra - Beyond the Markov Chains and Neumann - Ulam Scheme</i> B-52
10:50 – 11:20	Coffee Break

	Chairperson: R. Lazarov
11:20 – 12:00	J.-L. Guermont, M. Nazarov, R. Pasquetti, B. Popov, <i>Entropy Viscosity for Nonlinear Conservation Laws</i> B-29
12:00 – 12:30	S. Parter, <i>Revisiting Preconditioning: An Interesting Result and the Lessons Learned from It</i> B-44
12:30 – 14:30	LUNCH
13:30 – 14:30	Registration

Parallel Sessions

Lecture Hall A <i>“Monte Carlo and Quasi-Monte Carlo Methods”</i>	Lecture Hall B <i>Contributed Talks “Approximation Techniques in Numerical Analysis”</i>
Chairperson: M. Nedjalkov	Chairperson: Bl. Sendov
14:30 – 15:00 A. Asenov, <i>Advanced Monte Carlo Techniques in the Simulation of CMOS Devices and Circuits</i> B-2	14:30 – 14:50 G. P. Nikolov, P. B. Nikolov, <i>Quadrature Formulae Based on Interpolation by Parabolic Splines</i> B-43

<u>15:00 – 15:30</u> I. Dimov , R. Georgieva, <i>Monte Carlo Method for Numerical Integration Based on Sobol' Sequences</i>	<u>14:50 – 15:10</u> N. Naidenov , S. Kostadinova, <i>Bicubic Spline Recovering of Smooth Surfaces on the Basis of Irregular Data</i>	B-18	B-42
	<u>15:10 – 15:30</u> V. H. Hristov, N. V. Kyurkchiev, A. I. Iliev , <i>Global Convergence Properties of the SOR-Weierstrass Method</i>	B-31	
<u>15:30 – 15:50</u> S. Stefanov , <i>Particle Monte Carlo Algorithms with Small Number of Particles in Grid Cells</i>	<u>15:30 – 15:50</u> I. Markovskiy , <i>Affine Data Modeling by Low-Rank Approximation</i>	B-56	B-40
<u>15:50 – 16:10</u> I. Lirkov, S. Stoilova , <i>The b-adic Diaphony as a Tool to Study Pseudo-randomness of Nets</i>	<u>15:50 – 16:10</u> C. Meszaros , <i>On Some Properties of the Augmented Systems Arising in Interior Point Methods</i>	B-38	B-41
<u>16:10 – 16:40</u>	Coffee Break		

Parallel Sessions

Lecture Hall A "Environmental Modelling"	Lecture Hall B Contributed Talks "Numerical Methods for Differential and Integral Equations"
Chairperson: A. Strunk	Chairperson: I. Yotov
<u>16:40 – 16:50</u> Opening	<u>16:40 – 17:00</u> M. Grote, T. Mitkova , <i>High-Order Explicit Local Time-Stepping for Damped Wave Equations</i>
<u>16:50 – 17:20</u> K. Georgiev , Z. Zlatev, <i>Specialized Sparse Matrices Solver in the Chemical Part of an Environmental Model</i>	<u>17:00 – 17:20</u> A. Bradji , J. Fuhrmann, <i>Some Error Estimates for the Discretization of Parabolic Equations on General Multidimensional Nonconforming Spatial Meshes</i>
B-27	B-10
<u>17:20 – 17:40</u> M. C. Vila , J. Soeiro de Carvalho, A. Fiúza, <i>Advanced Numerical Tools Applied to Geo- Environmental Engineering - Soils Contaminated by Petroleum Hydrocarbons, A Case Study</i>	<u>17:20 – 17:40</u> N. Kolkovska , <i>Convergence of Finite Difference Schemes for a Multidimensional Boussinesq Equation</i>
B-60	B-35

<u>17:40 – 18:00</u> J. Březina , P. Rálek, M. Hokr, <i>Parallel Simulator of Multidimensional Fracture Flow and Transport</i> B-11	<u>17:40 – 18:00</u> S. C. S. Rao , S. Kumar, <i>An Efficient Numerical Method for a System of Singularly Perturbed Semilinear Reaction-Diffusion Equations</i> B-49
<u>18:00 – 18:20</u> K. Liolios , S. Radev, V. Tsihrintzis, <i>A Numerical Investigation for the Optimal Contaminant Inlet Positions in Horizontal Subsurface Flow Wetlands</i> B-37	<u>18:00 – 18:20</u> C. Hofreither , <i>A Non-Standard Finite Element Method Based on Boundary Integral Operators</i> B-30
19:30	RECEPTION

Saturday, August 21

Parallel Sessions

Lecture Hall A “Metaheuristics for Optimization Problems”	Lecture Hall B “Environmental Modelling”
Chairperson: S. Fidanova	Chairperson: K. Georgiev
<u>09:00 – 09:30</u> C. Cotta , <i>Future Generation Memetic Algorithms</i> B-13	<u>09:00 – 09:20</u> A. Strunk , H. Elbern, A. Ebel, <i>Using Satellite Observations for Air Quality Assessment with an Inverse Model System</i> B-57
<u>09:30 – 09:50</u> F. Zamfirache , M. Frîncu, D. Zaharie, <i>Population-based Metaheuristics for Tasks Scheduling in Heterogeneous Distributed Systems</i> B-61	<u>09:20 – 09:40</u> K. Ganev , G. Gadzhev, N. Miloshev, G. Jordanov, A. Todorova, D. Syrakov, M. Prodanova, <i>Atmospheric Composition Studies for the Balkan Region</i> B-24
<u>09:50 – 10:10</u> D. Simian , F. Stoica, C. Simian, <i>Evaluation of the Co-mutation Operators in Optimization of Multiple SVM Kernels</i> B-55	<u>09:40 – 10:00</u> I. Etropolska, M. Prodanova , D. Syrakov, K. Ganev, N. Miloshev, K. Slavov, <i>Bulgarian Operative System for Chemical Weather Forecast</i> B-20
	<u>10:00 – 10:20</u> A. Terziyski , N. Kochev, <i>Distributed Software System for Data Evaluation and Numerical Simulations of Atmospheric Processes</i> B-58
10:20 – 10:50	Coffee Break

Parallel Sessions

Lecture Hall A “ <i>Metaheuristics for Optimization Problems</i> ”	Lecture Hall B “ <i>Monte Carlo and Quasi-Monte Carlo Methods</i> ”
Chairperson: C. Cotta	Chairperson: A. Penzov
<u>10:50 – 11:10</u> S. Fidanova , P. Marinov, K. Atanassov, <i>Start Strategies of ACO Applied on Subset Problems</i> B-21	<u>10:50 – 11:20</u> M. Magdics, L. Szirmay-Kalos , B. Tóth, Á. Csenedesi, A. Penzov, <i>Scatter Estimation for PET Reconstruction</i> B-38
<u>11:10 – 11:30</u> S. Fidanova, P. Marinov , K. Atanassov, <i>Sensitivity Analysis of ACO Start Strategies for Subset Problems</i> B-22	<u>11:20 – 11:40</u> K. Sabelfeld, N. Mozartova , <i>Sparsified Randomization Algorithms for the SVD based Low Rank Approximations</i> B-52
<u>11:30 – 11:50</u> A. Băutu , H. Luchian, <i>Protein Structure Prediction in the 2D HP Model Using Particle Swarm Optimization</i> B-7	<u>11:40 – 12:00</u> M. L. Dinis , A. Fiúza, <i>Using Monte-Carlo Simulation for Risk Assessment: Application to Occupational Exposure During Remediation Works</i> B-19
<u>11:50 – 12:10</u> J. P. Pedroso , <i>Metaheuristics for the Asymmetric Hamiltonian Path</i> B-45	<u>12:00 – 12:20</u> T. Averina , <i>Monte Carlo Simulation of Inhomogeneous Poisson Ensembles</i> B-5
<u>12:20 – 14:30</u>	LUNCH
<u>14:00 – 14:30</u>	Registration

Parallel Sessions

Lecture Hall A Contributed Talks “ <i>Hierarchical and Domain Decomposition Methods</i> ”	Lecture Hall B Contributed Talks “ <i>Computational Physics, Chemistry, Biology and Engineering</i> ”
Chairperson: S. Margenov	Chairperson: St. Radev
<u>14:30 – 14:50</u> E. Karer, J. Kraus , L. Zikatanov, <i>Auxiliary Space Preconditioner for a Locking-free Finite Element Approximation of the Linear Elasticity Problem</i> B-34	<u>14:30 – 14:50</u> M. Hokr , J. Kopal, J. Březina, P. Rálek, <i>Sensitivity of Results of the Water Flow Problem in a Discrete Fracture Network with Large Coefficient Differences</i> B-30
<u>14:50 – 15:10</u> B. Ayuso, I. Georgiev , J. Kraus, L. Zikatanov, <i>Preconditioning of DG FEM Elasticity Systems</i> B-6	<u>14:50 – 15:10</u> C. I. Christov, N. T. Kolkovska, D. P. Vasileva , <i>On the Numerical Simulation of Unsteady Solutions for the 2D Boussinesq Paradigm Equation</i> B-12

<u>15:10 – 15:30</u> P. Boyanova , S. Margenov, <i>Optimal Order Multilevel Solvers in a Projection Scheme for Navier-Stokes Equations</i> B-9	<u>15:10 – 15:30</u> I. Hristov , S. Dimova, <i>Fluxon Dynamics in Stacked Josephson Junctions</i> B-31
<u>15:30 – 15:50</u> P. Popov , Y. Efendiev, Y. Gorb, <i>Multiscale Modeling of Poroelasticity in Highly Deformable Fractured Reservoirs</i> B-46	<u>15:30 – 15:50</u> <u>T. L. Boyadjiev</u> , H. T. Melemov , <i>Merger Bound States in $0-\pi$ Josephson Structures</i> B-9
<u>15:50 – 16:10</u> I. Georgiev, M. Lybery , S. Margenov, <i>Analysis of the Constant in the Strengthened Cauchy-Bunyakowski-Schwarz Inequality for Quadratic Finite Elements</i> B-27	<u>15:50 – 16:10</u> M. Dimova , S. Dimova, <i>Numerical Investigation of Self-Similar Solutions of a Reaction Diffusion Equation in a Vicinity of Critical Parameters</i> B-18
<u>16:10 – 16:40</u>	Coffee Break

Parallel Sessions

Lecture Hall A Contributed Talks “Computational Mechanics”	Lecture Hall B Contributed Talks “Computational Physics, Chemistry, Biology and Engineering”
Chairperson: P. Vabishchevich	Chairperson: S. Dimova
<u>16:40 – 17:00</u> J.-L. Guermond, P. D. Minev , <i>A New Class of Fractional Step Techniques for the Incompressible Navier-Stokes Equations Using Direction Splitting</i> B-29	<u>16:40 – 17:00</u> N. N. Elkin , A. P. Napartovich, D. V. Vysotsky, <i>Bidirectional Beam Propagation Method Applied for Lasers with Multilayer Active Medium</i> B-20
<u>17:00 – 17:20</u> A. S. Shamaev, A. A. Gavrikov, D. U. Knyazkov , <i>Some Spectral Problems of Porous Media Acoustics</i> B-54	<u>17:00 – 17:20</u> A. Liolios , S. Radev, <i>A Numerical Approach for Obtaining Fragility Curves in Seismic Structural Mechanics: A Bridge Case of Egnatia Motorway in Northern Greece</i> B-36
<u>17:20 – 17:40</u> S. Radev , N. K. Vitanov, <i>Application of Spectral Method for Investigation of the Profiles of the Optimum Fields for Variational Problems Connected to the Turbulent Thermal Convection</i> B-47	<u>17:20 – 17:40</u> G. Bencheva , <i>On the Numerical Solution of a Chemotaxis System in Haematology</i> B-8

<p><u>17:40 – 18:00</u> N. K. Vitanov, <i>Numerical Investigation of the Upper Bounds on the Convective Heat Transport in a Heated From Below Rotating Fluid Layer</i></p> <p style="text-align: right;">B-61</p>	<p><u>17:40 – 18:00</u> P. Kh. Atanasova, T. L. Boyadjiev, E. V. Zemlyanaya, Yu. M. Shukrinov, <i>Stability Analysis of Magnetic Flux in the LJJ Model with Double Sine-Gordon Equation</i></p> <p style="text-align: right;">B-2</p>
<p><u>18:00 – 18:20</u> S. Stoykov, P. Ribeiro, <i>Forced Vibrations of 3D Beams with Large Amplitudes</i></p> <p style="text-align: right;">B-57</p>	

Sunday, August 22

Plenary Session

Lecture Hall A	
	Chairperson: J.-L. Guermond
08:45 – 09:25	<p>M. Feistauer, <i>Discontinuous Galerkin Finite Element Method for Convection-Diffusion Problems and Compressible Flow</i></p> <p style="text-align: right;">B-21</p>
09:25 – 10:05	<p>J. Schöberl, <i>Hybrid Discontinuous Galerkin Methods with Vector Valued Finite Elements</i></p> <p style="text-align: right;">B-53</p>
10:05 – 10:20	Coffee Break
	Chairperson: K. Sabelfeld
10:20 – 11:00	<p>B. Ganis, D. Vassilev, I. Yotov, M. Zhong, <i>A Multiscale Stochastic Framework for Stokes-Darcy Flow and Transport</i></p> <p style="text-align: right;">B-25</p>
11:00 – 11:30	<p>O. P. Iliev, R. Lazarov, J. Willems <i>Numerical Upscaling of Flows in Highly Heterogeneous Porous Media</i></p> <p style="text-align: right;">B-32</p>
11:30 – 12:30	LUNCH
12:30	EXCURSION

Monday, August 23

Plenary Session

Lecture Hall A		
Chairperson: M. Feistauer		
09:00 – 9:40	P. Vabishchevich , <i>SM Stability for Time-Dependent Problems</i>	B-59
09:40 – 10:10	E. Burman, A. Ern , M. A. Fernández, <i>Explicit Runge - Kutta Schemes and Finite Elements with Symmetric Stabilization for First-Order Linear PDE Systems</i>	B-12
10:10 – 10:40	Coffee Break	

Parallel Sessions

Lecture Hall A "Monte Carlo and Quasi-Monte Carlo Methods"	Lecture Hall B "Environmental Modelling"
Chairperson: K. Sabelfeld	Chairperson: K. Georgiev
<u>10:35 – 11:00</u> D. Vasileska , A. Hossain, K. Raleva, S. M. Goodnick <i>Is Self-Heating Important in Nanowire FETs?</i> B-59	<u>10:40 – 11:00</u> T. Brechet, C. Camacho, V. Veliov , <i>Global Warming and Economic Behaviour</i> B-10
<u>11:00 – 11:20</u> K. Raleva , D. Vasileska, S. M. Goodnick <i>Modeling Thermal Effects in Fully-Depleted SOI Devices with Arbitrary Crystallographic Orientation</i> B-48	<u>11:00 – 11:20</u> Tz. Ostromsky , I. Dimov, Havasi, I. Farago, Z. Zlatev, <i>Richardson Extrapolated Numerical Methods for One-Dimensional Advection Schemes</i> B-44
<u>11:20 – 11:40</u> M. Nedjalkov , S. Selberherr, I. Dimov, <i>Stochastic Algorithm for Solving the Wigner-Boltzmann Correction Equation</i> B-43	<u>11:20 – 11:40</u> E. Băutu , A. Bărbulescu, <i>Mining Temperature Trends with GEP Ensembles</i> B-8
<u>11:40 – 12:00</u> A. Makarov , V. Sverdlov, S. Selberherr, <i>Modeling of the SET and RESET Process in Bipolar Resistive Oxide-Based Memory using Monte Carlo Simulations</i> B-39	<u>11:40 – 12:00</u> N. Dobrinkova , G. Jordanov, J. Mandel, <i>WRF-Fire Applied in Bulgaria</i> B-19
<u>12:00 – 12:20</u> V. Baláz, V. Grozdanov , V. Ristovska-Dimitrieva, O. Strauch, S. Stoilova, <i>On the Mean Square Worst-Case Error of the Quasi-Monte Carlo Integration in Weighted Sobolev Spaces</i> B-6	<u>12:00 – 12:20</u> G. Dimitriu , R. Ștefănescu <i>Comparative Numerical Results in 4D-Var Data Assimilation Problems Using POD Techniques</i> B-62
12:20 – 14:30	LUNCH
14:00 – 14:30	Registration

Parallel Sessions

Lecture Hall A <i>“Metaheuristics for Optimization Problems”</i>	Lecture Hall B <i>“Modelling and Simulation of Electrochemical Processes”</i>
Chairperson: K. Penev	Chairperson: O. Iliev
<u>14:30 – 14:50</u> O. Roeva , T. Slavov, <i>Fed-batch Cultivation Control based on Genetic Algorithm PID Controller Tuning</i> <div style="text-align: right;">B-50</div>	<u>14:30 – 15:00</u> J. Fuhrmann , K. Gärtner, M. Ehrhardt, A. Linke, H. Langmach, H. Zhao, <i>Numerical Modeling in Electrochemistry by Voronoi Finite Volume Methods</i> <div style="text-align: right;">B-23</div>
<u>14:50 – 15:10</u> F. Torrecilla-Pinero , J. A. Torrecilla-Pinero, J. A. Gomez-Pulido, M. A. Vega-Rodriguez, J. M. Sanchez-Perez, <i>Parameter Estimation for a Logistic Curve. An Example of Use in an Engineering Problem</i> <div style="text-align: right;">B-58</div>	<u>15:00 – 15:20</u> O. Iliev , A. Latz, J. Zausch, <i>Modeling of Species and Charge Transport in Li-Ion Batteries</i> <div style="text-align: right;">B-33</div>
<u>15:10 – 15:30</u> I. Skalna , J. Duda , <i>A Comparison of Metaheuristics for the Problem of Solving Parametric Interval Linear Systems</i> <div style="text-align: right;">B-55</div>	<u>15:20 – 15:40</u> O. Iliev , S. Margenov, P. Popov, Y. Vutov , <i>Finite Volume Discretization of Nonlinear Diffusion in Li-Ion Batteries</i> <div style="text-align: right;">B-33</div>
<u>15:30 – 15:50</u> M. Angelova , S. Tzonkov, T. Pencheva, <i>Genetic Algorithms Based Parameter Identification of Yeast Fed-Batch Cultivation</i> <div style="text-align: right;">B-1</div>	<u>15:40 – 16:00</u> K. Bartkowski , O. Iliev, A. Latz, <i>On Numerical Simulation of 1D Problems Describing Transport Processes in Li-Ion Batteries</i> <div style="text-align: right;">B-7</div>
<u>15:50 – 16:10</u> M. Seredynski , P. Bouvry, <i>Perspectives of a Selfish Behavior in Self-Policing Wireless Mobile Ad Hoc Network</i> <div style="text-align: right;">B-53</div>	
<u>16:10 – 16:40</u>	Coffee Break

Parallel Sessions

Lecture Hall A <i>“Grid Computing and Applications”</i>	Lecture Hall B <i>Contributed Talks “Numerical Linear Algebra”</i>
Chairperson: E. Atanassov	Chairperson: J. Schöberl
<u>16:40 – 17:10</u> E. Atanassov , T. Gurov, A. Karaivanova, S. Ivanovska, D. Slavov, <i>Efficient Gridification of Environmental Modeling Applications</i> <div style="text-align: right;">B-3</div>	<u>16:40 – 17:00</u> J. Buša , J. Buša, jr., E. Hayryan, <i>OpenCL Implementation of the Analytical Method for the Computation of the Accessible Surface Area and Excluded Volume of Overlapping Spheres</i> <div style="text-align: right;">B-11</div>

<u>17:10 – 17:30</u> V. Spiridonov, D. Syrakov , M. Prodanova, A. Bogachev, K. Ganev, N. Miloshev, G. Jordanov, K. Slavov, <i>First results of See-Grid-Sci VO</i> <i>"Environment" Application CCIAQ</i> B-56	<u>17:00 – 17:20</u> M. Manguoglu , E. Cox, F. Saied, A. Sameh, <i>Parallel Computation of the Fiedler Vector</i> <i>and Solution of Large Sparse Linear</i> <i>Systems via Banded Preconditioners</i> B-40
<u>17:30 – 17:50</u> C. Resteanu , R. Trandafir, <i>Programming Problems with a Large</i> <i>Number of Objective Functions</i> B-50	<u>17:20 – 17:40</u> P. D. Michailidis , K. G. Margaritis, <i>Experimental Study of Matrix</i> <i>Multiplication on MultiCore Processors</i> B-41
<u>17:50 – 18:10</u> R. Goranova , <i>An Approach of Modeling ROOT Processes</i> <i>in Grid</i> B-28	<u>17:40 – 18:00</u> I. Skalna , <i>Interval Dependency and the Problem of</i> <i>Solving Parametric Linear Systems</i> B-55
<u>18:10 – 18:30</u> E. Atanassov, M. Durchova , <i>Efficient GPU-based Generation of the</i> <i>Scrambled Halton Sequence</i> B-3	<u>18:00 – 18:20</u> P. Hr. Petkov, M. M. Konstantinov , N. D. Christov, <i>Condition and Error Estimates in Kalman</i> <i>Filter Design</i> B-46
19:30	CONFERENCE DINNER

Tuesday, August 24

Parallel Sessions

Lecture Hall A "Metaheuristics for Optimization Problems"	Lecture Hall B Contributed Talks "Numerical Methods for Differential and Integral Equations"
Chairperson: S. Fidanova	Chairperson: N. Kolkovska
<u>09:30 – 09:50</u> N. Fujimoto , S. Tsutsui, <i>A Highly-Parallel TSP Solver for a GPU</i> <i>Computing Platform</i> B-24	<u>09:30 – 09:50</u> J. D. Kandilarov , R. L. Vulkov, <i>A Numerical Approach for the American</i> <i>Call Option Pricing Model</i> B-34
<u>09:50 – 10:10</u> K. Penev , A. Ruzhekov, <i>Adaptive Intelligence Applied to Numerical</i> <i>Optimisation</i> B-46	<u>09:50 – 10:10</u> T. Chernogorova, R. Valkov , <i>Finite-Volume Difference Schemes for the</i> <i>Black-Sholes Equation in Stochastic</i> <i>Volatility Models</i> B-12
<u>10:10 – 10:30</u> A. Ruzhekov , K. Penev, <i>Tool for Observation, Comparison and</i> <i>Analysis of Advanced Search Algorithms</i> B-51	<u>10:10 – 10:30</u> M. N. Koleva, L. G. Vulkov , <i>A Numerical Study of a Parabolic Monge-</i> <i>Ampere Equation in Mathematical Finance</i> B-35

<u>10:30 – 10:50</u> V. Atanassova , K. Atanassov, <i>Ant Colony Optimization Approach to Tokens' Movement within Generalized Nets</i> B-5	<u>10:30 – 10:50</u> N. Ishimura, M. N. Koleva , L. G. Vulkov, <i>Numerical Solution of a Nonlinear Evolution Equation for the Risk Preference</i> B-34
<u>10:50 – 11:10</u> L. Atanassova, K. Atanassov , <i>Intuitionistic Fuzzy Interpretation of Conway's Game of Life</i> B-4	<u>10:50 – 11:10</u> A. Andreev, M. Racheva , <i>On the Integral Type Crouzeix-Raviart Nonconforming Finite Elements</i> B-1
<u>11:10 – 11:30</u> M. Hernández, J. J. Cáceres, M. Pérez , <i>Forecasting the Composition of Demand for Higher Education Degrees by Genetic Algorithms</i> B-29	<u>11:10 – 11:30</u> A. Andreev , M. Racheva, <i>Postprocessing Techniques Using a Linear Nonconforming Finite Elements</i> B-1
DEPARTURE	