

**NUMTA-2013 PROGRAM (June 17 – 23, 2013)**

**June 17, Monday (Arrival day)**

18.00 - 20.00	<i>Registration and Welcome cocktail</i>
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**June 18, Tuesday**

9.00 – 9.10	<i>Opening session</i>
<b>Chairman: Aljoša Volčič</b>	
9.10 – 10.10	Tutorial: <b>Luigi Brugnano</b> , Recent advances in geometric integration
10.10 – 11.10	Tutorial: <b>Luc Jaulin</b> , Parametric global optimization: Application to sailboat robotics
	<i>Coffee break</i>
11.30 – 13.30	Parallel streams (Streams 1, 2)
13.30 – 13.40	<i>Taking the official photo of the NUMTA-2013</i>
13.40 – 15.00	<i>Lunch</i>
15.30 – 17.30	Parallel streams (Streams 3, 4, 5)
	<i>Coffee break</i>
<b>Chairman: Renato De Leone</b>	
17.50 – 18.30	Plenary Lecture: <b>Joseph Zyss</b> , Polymer based micro-billiard lasers: A test-bed in nonlinear physics and applications
18.30 – 19.30	Tutorial: <b>Yaroslav Sergeyev</b> , Grossone infinity computing: Foundations

**June 19, Wednesday**

9.00 – 11.00	Parallel streams (Streams 6, 7)
	<i>Coffee break</i>
<b>Chairman: Yaroslav Sergeyev</b>	
11.20 – 11.30	<i>An important announcement</i>
11.30 – 12.10	Plenary Lecture: <b>Manlio Gaudioso</b> , Tractable minmaxmin problems
12.10 – 12.50	Plenary Lecture: <b>Panos Pardalos</b> , Global optimality conditions in non-convex optimization and related issues
12.50 – 13.30	Plenary Lecture: <b>Roman Strongin</b> , Constrained global optimization: Multiprocessor approach
13.30 – 15.00	<i>Lunch</i>
15.30 – 17.30	Parallel streams (Streams 8, 9, 10–Posters)
	<i>Coffee break</i>
<b>Chairman: Luigi Brugnano</b>	
17.50 – 18.50	Tutorial: <b>Renato De Leone</b> , The use of Grossone in Mathematical Programming
18.50 – 19.50	Tutorial: <b>Igor Volovich</b> , Computations with rational numbers and black hole formation paradox

**June 20, Thursday**

Excursion

**June 21, Friday**

9.00 – 11.00	Parallel streams (Streams 11, 12)
	<i>Coffee break</i>
<b>Chairman: Luc Jaulin</b>	
11.30 – 12.30	Tutorial: <b>Khodr Shamseddine</b> , Analysis on non-Archimedean field extensions of the real numbers and applications
12.30 – 13.30	Tutorial: <b>Andrew Adamatzky</b> , Computing with patterns: Chemical waves, slime mould and crystals
13.30 – 15.00	<i>Lunch</i>
15.30 – 17.30	Parallel streams (Streams 13, 14)
	<i>Coffee break</i>
<b>Chairman: Roman Strongin</b>	
17.50 – 18.50	Tutorial: <b>Hiroshi Umeo</b> , Synchronization in cellular automata
18.50 – 19.50	Tutorial: <b>Anatoly Zhigljavsky</b> , Computing sums of conditionally convergent and divergent series using the concept of grossone
20.30	<i>Conference Dinner</i>

**June 22, Saturday**

9.00 – 11.00	Parallel streams (Streams 15, 16, 17)
	<i>Coffee break</i>
<b>Chairman: Anatoly Zhigljavsky</b>	
11.30 – 12.10	Plenary Lecture: <b>Gabriele Lolli</b> , Metamathematical investigations on the theory of Grossone
12.10 – 12.50	Plenary Lecture: <b>David Yang Gao</b> , Canonical duality and triality: Unified understanding complex systems and NP-hard problems
12.50 – 13.30	Plenary Lecture: <b>Igor Pospelov</b> , Emerging utility
13.30 – 15.00	<i>Lunch</i>
15.30 – 17.30	Parallel streams (Streams 18, 19)
17.30	<i>Closing NUMTA-2013</i>

**June 23, Sunday (Departure day)**

**NUMTA-2013 PARALLEL STREAMS**

**June 18, Tuesday morning (11.30): Stream 1 (Hall A)**

<b>Chairman: Igor Poloskov</b>	
11.30 – 12.00	<b>J. Calvin</b> , Average-Case Analysis of Optimization of Brownian Bridge with Normal Measurement Error
12.00 – 12.30	<b>E. Liverts</b> , N. Barnea, Three-Body Coulomb Systems: Bound S-States and Resonances
12.30 – 12.50	<b>O. Kuzenkov</b> , Optimal Control of Measure Dynamics
12.50 – 13.10	R. Samanta, <b>A. Erzin</b> , S. Raha, Y. V. Shamardin, I. I. Takhonov, V. V. Zalyubovskiy, A Provably Tight Delay-Driven Concurrently Congestion Mitigating Global Routing Algorithm
13.10 – 13.30	<b>D. L. Carni</b> , D. Grimaldi, G. Fedele, Analysis of Multi Step Exponential Signal Based on Prony-Like Method and Sliding Window

**June 18, Tuesday morning (11.30): Stream 2 (Hall B)**

<b>Chairman: Luc Jaulin</b>	
11.30 – 12.00	<b>V. Serov</b> , Inverse Problems for Nonlinear Schrödinger Operator
12.00 – 12.30	<b>A. De Piero</b> , The Majorizing Functions Approach in Inverse Problems
12.30 – 12.50	<b>A.-M. Soliman</b> , New Numerical Technique for Solving Two Dimensional Burgers' Equations Based on Similarity Reductions
12.50 – 13.10	<b>R. S. Alassar</b> , Convection in Semicircular Tubes
13.10 – 13.30	N. Sengil, K. M. Güleren, <b>U. Sengil</b> , Numerical Analysis of the Radiating Fins Used in Solar Cell Concentrators

**June 18, Tuesday afternoon (15.30): Stream 3 (Hall A)**

<b>Chairman: Jim Calvin</b>	
15.30 – 16.00	<b>A. I. Erzin</b> , V. Plotnikov, Y. V. Shamardin, Communication Spanning Tree Problem in Wireless Sensor Networks
16.00 – 16.30	<b>E. Gimadi</b> , Effective Algorithms with Performance Ratios for Some Combinatorial Problems of Finding Several Discrete Structures in Complete Weighted Graph
16.30 – 16.50	<b>A. Belyaev</b> , V. Maag, K.-H. Küfer, Test Rig Optimization and Block Loads
16.50 – 17.10	<b>J. Žilinskas</b> , A. Žilinskas, On Discrete Representation of Pareto Set in Non-Convex Multi-Objective Optimization
17.10 – 17.30	<b>A. Varoneckas</b> , A. Žilinskas, J. Žilinskas, Multi-Objective Optimization Aided Drawing of Special Graphs

**June 18, Tuesday afternoon (15.30): Stream 4 (Hall B)**

<b>Chairman: Vladimir Kanovei</b>	
15.30 – 16.00	<b>A. Volčič</b> , I. Carbone, Quasi-Monte Carlo Method and New Classes of Uniformly Distributed Sequences
16.00 – 16.30	<b>D.A. Tarzia</b> , Convergence of a Family of Discrete Distributed Elliptic Optimal Control Problems with Respect to a Parameter
16.30 – 16.50	<b>I. Carbone</b> , A. Volčič, Dynamical Systems and Low Discrepancy Sequences
16.50 – 17.10	<b>E. Yurova</b> , A. Khrennikov, Criteria of Ergodicity for $p$ -Adic Dynamical Systems
17.10 – 17.30	<b>V. Suppakitpaisarn</b> , Worst Case Computation Time for Minimal Joint Hamming Weight Numeral Systems

**June 18, Tuesday afternoon (15.30): Stream 5 (Hall C)**

<b>Chairman: Joseph Zyss</b>	
15.30 – 16.00	<b>G. Ala</b> , E. Francomano, S. Ganci, Unconditionally Stable Meshless Integration of Maxwell's Equations
16.00 – 16.20	<b>T.H. McNicholl</b> , V. V. Andreev, Computing Upper Bounds on the Constant of Interpolation
16.20 – 16.40	<b>V. N. Katsikis</b> , A Computational Study of Option Replication Based on Riesz Space Theory
16.40 – 17.00	<b>J. Henderson</b> , S. Bistarelli, M. Ceberio, Multi-Experts Multi-Criteria Decision Making
17.00 – 17.20	<b>M. A. Bayrak</b> , A. G. Fatullayev, E. Can, Interpolation of Fuzzy Numbers

**June 19, Wednesday morning (9.00): Stream 6 (Hall A)**

<b>Chairman: Luigi Brugnano</b>	
9.00 – 9.30	<b>P. D'Ambra</b> , An AMG Based on Compatible Weighted Matching for Image Segmentation
9.30 – 10.00	<b>L. Portero</b> , A. Arrarás, F. J. Gaspar, C. Rodrigo, Domain Decomposition Multigrid Methods for the Numerical Solution of Parabolic Equations
10.00 – 10.20	<b>W. Themistoclakis</b> , A. Vecchio, On the Numerical Solution of Some Nonlinear and Nonlocal Boundary Value Problems
10.20 – 10.40	<b>M. R. Capobianco</b> , G. Criscuolo, Product Rules Over the Square of Weakly Singular Double Integrals
10.40 – 11.00	<b>Ya. D. Sergeyev</b> , Numerical Infinitesimals for Solving ODEs

**June 19, Wednesday morning (9.00): Stream 7 (Hall B)**

<b>Chairman: David Yang Gao</b>	
9.00 – 9.30	<b>O. Burdakov</b> , L. Gong, Y. Yuan, S. Zikrin, Limited-Memory Methods with Shape Changing Trust Region
9.30 – 10.00	<b>E. Shmerling</b> , Range Reduction Method for Generating Random Vectors
10.00 – 10.30	<b>H.K. Alfares</b> , O.G. Alsawafy, Simulated Annealing for a Bi-Objective Trim Loss Problem with a Variable Large Object Length
10.30 – 11.00	<b>A. Strekalovsky</b> , Modern Methods for Solving Problems with Hidden Nonconvex Structures

**June 19, Wednesday afternoon (15.30): Stream 8 (Hall A)**

<b>Chairman: Anatoly Zhigljavsky</b>	
15.30 – 16.00	<b>D. Iudin</b> , Ya. D. Sergeyev, M. Hayakawa, Infinity Computations in Percolation Theory Applications
16.00 – 16.30	<b>A. Garro</b> , Ya. D. Sergeyev, Observing Turing Machines Through the Lens of the Grossone Methodology
16.30 – 17.00	<b>M. Margenstern</b> , The Power of Grossone: From Bases to Hyperbolic Geometry
17.00 – 17.30	<b>Round Table</b> on Grossone Theory and Its Applications

**June 19, Wednesday afternoon (15.30): Stream 9 (Hall B)**

<b>Chairman: Domingo A. Tarzia</b>	
15.30 – 16.00	<b>R. M. Pidotella</b> , G. Gallo, M. Zeinali, Pattern Classification through Fuzzy Likelihood
16.00 – 16.30	<b>Yu.S. Volkov</b> , Positivity Conditions in the Interpolation Problem by Weighted Cubic Splines
16.30 – 16.50	<b>M. Mazza</b> , S. De Marchi, F. Dell'Accio, On the Constrained Mock-Chebyshev Least-Squares
16.50 – 17.10	<b>G. Arslan</b> , N. Kayaalp, A Fuzzy Bayesian Classifier with Learned Mahalanobis Distance
17.10 – 17.30	<b>R. Di Salvo</b> , L. Puccio, A Fast Algorithm for the Treatment of Integer Data in $Z=pZ$

**June 19, Wednesday afternoon (15.30): Stream 10 (Poster session – Coffee-break room)**

<b>M. Bayrak</b> , M.A. Bayrak, Approximate Solution of Inverse Parabolic Problem
<b>Ks.D. Dyatlova</b> , Measurement and System Analysis of a Set of Academic and Psychological Characteristics for the First Year Students
<b>H. Ergören</b> , Existence Results for Fractional Differential Equations with Weakly Contractive Mappings
<b>A.A. Gorbunov</b> , L.Yu. Rotkov, Linearity Identification Tests for Cryptosystem Models
<b>A.V. Grishagin</b> , Method of Neighborhoods in Pattern Recognition Problems: Parallel Implementations Using MPI and OpenMP
<b>F. Iudin</b> , D. Iudin, Ya.D. Sergeyev, Self-Organized Bursting Dynamics of Neuronal Networks and Infinity Computations
<b>G. Karadeniz Gözeri</b> , A.Özkoç, A. Tekcan, Triangular and Square Triangular Numbers
<b>A.S. Katerov</b> , L.G. Afraimovich, M.Kh. Prilutskii, Solving Multi-index Linear Programs by Reducing to Tree-Like Networks
<b>U. Kulakovich</b> , M.Kh. Prilutskii, Hierarchical Tree Structure Systems with Costs
<b>S. Nikitenkova</b> , N. Raj, Y. Stepanyants, Analytical and Numerical Modelling of Nonlinear Vector Waves in a Chain Model of Anisotropic Crystals
<b>S. Ögüt</b> , A. Kentli, Using a Novel Methodology in Finding the Optimum Truss Structure
<b>M. Pankratova</b> , N. Starostin, Mapping of the Graph of a Parallel Program to the Graph of a Computing System
<b>S. Suleiman</b> , T. Steihaug, Curvilinear Search and Higher Order Methods

**June 21, Friday morning (9.00): Stream 11 (Hall B)**

<b>Chairman: Valery Serov</b>	
9.00 – 9.30	<b>A. Luongo</b> , M. Ferretti, Fractional Sensitivities of Semi-Simple Eigenvalues For Bifurcation Analysis
9.30 – 10.00	<b>V. Kalyagin</b> , M. Sokolov, E. Zakharova, Vector Continued Fractions: Old Ideas, New Applications
10.00 – 10.20	<b>C. Çelik</b> , Stability and Hopf Bifurcation in a Delayed Ratio Dependent Holling-Tanner Type Model
10.20 – 10.40	<b>A. Tröltzsch</b> , A Practical Trust-Region SQP Algorithm for Equality- and Bound-Constrained Optimization without Derivatives
10.40 – 11.00	<b>Y. Shiraki</b> , T. Ishiwata, A New Method Improving the Convergence Performance of IRWLS-Based All-Pass IIR Filters

**June 21, Friday morning (9.00): Stream 12 (Hall A)**

<b>Chairman: Julius Žilinskas</b>	
9.00 – 9.20	N. Ruan, <b>D. Y. Gao</b> , Complete Solutions to Nonconvex Fractional Programming Problems
9.20 – 9.40	<b>A. Benfenati</b> , V. Ruggiero, Image Restoration from Poisson Data by an Inexact Bregman Iteration Scheme
9.40 – 10.00	<b>O. Baturina</b> , V. Gurman, I. Rasina, Discrete-Continuous Models and Optimization of Heterogeneous Systems
10.00 – 10.20	<b>D. Lera</b> , Ya. D. Sergeyev, Global Optimization Methods for Lipschitz Functions Using Space-Filling Curves
10.20 – 10.40	<b>R. Zanella</b> , G. Zanghirati, G. Vicidomini, M. Bertero, P. Boccacci, L. Zanni, Optimization Methods for Real-Time Image Deconvolution on GPU Architectures
10.40 – 11.00	<b>K. Barkalov</b> , N. Olenev, Parallel Global Optimization for the Problem of a Regional Economy Model Identification

**June 21, Friday afternoon (15.30): Stream 13 (Hall A)**

<b>Chairman: Roman Strongin</b>	
15.30 – 16.00	<b>A. Zhigljavsky</b> , J. Gillard, Global Optimization Issues in Problems of Matrix Low Rank Approximation
16.00 – 16.30	<b>A. Orlov</b> , On Solution Methods to Bilevel Problems with D.C. and Bilinear Goal Functions
16.30 – 16.50	<b>R. Paulavičius</b> , J. Žilinskas, Investigation of Dividing SIMPLices Algorithm for Symmetric Lipschitz Optimization Problems
16.50 – 17.10	<b>D.E. Kvasov</b> , Ya.D. Sergeyev, Usage of the Lipschitz Condition in Diagonal Global Optimization
17.10 – 17.30	<b>A.G. Arrondo</b> , J.L. Redondo, J. Fernández, P. M. Ortigosa, High Performance Computing Applied to a Multi-Objective Evolutionary Algorithm

**June 21, Friday afternoon (15.30): Stream 14 (Hall B)**

<b>Chairman: Valery Yakhno</b>	
15.30 – 16.00	<b>Ş. Faydaoğlu</b> , Calculation of a Solution of Fourth-Order Initial Boundary Value Problem with Impulse
16.00 – 16.30	<b>V. Savelyev</b> , A. Borovkov, The Lower Bound of Changes in Production Operations
16.30 – 16.50	<b>A. Poleksic</b> , Gaussian Network Models for Protein Binding Site Comparison
16.50 – 17.10	<b>V. Ašeris</b> , R. Baronas, J. Kulys, Computational Modelling of the Biosensor with Competitive Substrates Conversion
17.10 – 17.30	<b>Ž. Ledas</b> , R. Baronas, R. Šimkus, Numerical Simulation of Bacterial Self-Organization in a Circular Container

**June 22, Saturday morning (9.00): Stream 15 (Hall B)**

<b>Chairman: Khodr Shamseddine</b>	
9.00 – 9.30	<b>V. Kanovei</b> , Nonstandard Analysis on Surreal Numbers
9.30 – 10.00	<b>I.E. Poloskov</b> , V. V. Malanin, Stochastic Systems with Aftereffect and Methods of Their Numeric & Symbolic Solution
10.00 – 10.20	<b>F. Dell'Accio</b> , F. Di Tommaso, P. Rossi, Enhancing the Approximation Order of Local Shepard Operators by Hermite-Birkhoff Polynomials
10.20 – 10.40	<b>E. Longo</b> , F.A. Costabile, An Algebraic Exposition of Umbral Calculus with Application to General Linear Interpolation Problem — A Survey
10.40 – 11.00	<b>A. Stroganov</b> , V. Aristov, Development of the Method of Computer Analogy for Analyzing and Solving Complex Systems

**June 22, Saturday morning (9.30): Stream 16 (Hall C)**

<b>Chairman: Gabriele Lolli</b>	
9.30 – 10.00	<b>E. E. Rosinger</b> , Syntactic - Semantic Axiomatic Theories in Mathematics
10.00 – 10.20	<b>M. McKubre-Jordens</b> , Constructive Lessons for Paraconsistency
10.20 – 10.40	<b>A.L. Sochkov</b> , A. M. Bekarev, Towards a New Philosophy of Mathematics Starting from Grossone Methodology
10.40 – 11.00	<b>A. Kazakova</b> , On Shifting of Methodological Metaphors or “Is Pure Sociology Possible?”

**June 22, Saturday morning (9.00): Stream 17 (Hall A)**

<b>Chairman: Angelo Luongo</b>	
9.00 – 9.30	<b>V. Yakhno</b> , T. Yakhno, Computing the Fundamental Solutions for Equations of Electrodynamics and Elastodynamics
9.30 – 10.00	<b>A. Zlotnik</b> , A New Space Discretization of the 1D Quasi-Gas Dynamic System of Equations and the Entropy Balance Equation
10.00 – 10.20	<b>A. Bourchtein</b> , L. Bourchtein, A Semi-Implicit Time-Splitting Scheme for Atmospheric Modeling
10.20 – 10.40	<b>L. Bourchtein</b> , A. Bourchtein, On Stability of Semi-Implicit Schemes for Atmospheric Models
10.40 – 11.00	G. Borgese, <b>C. Pace</b> , P. Pantano, E. Bilotta, FPGA-Based Calculator Using a CNN-UM Approach for Dynamical Systems Investigation

**June 22, Saturday afternoon (15.30): Stream 18 (Hall A)**

<b>Chairman: Hiroshi Umeo</b>	
15.30 – 16.00	<b>L. D'Alotto</b> , A Classification of Cellular Automata Using Grossone
16.00 – 16.20	<b>C. R. Calidonna</b> , M. V. Avolio, S. Di Gregorio, F. Gullace, V. Lupiano, A. M. Sempreviva, RUSICA: A Model for Sandy Shore Evolution
16.20 – 16.40	<b>W. Spataro</b> , D. D'Ambrosio, V. Lupiano, G. Iovine, R. Rongo, V. P. Bongolan, A Purposive Sampling Method for Lava Flow Susceptibility at Mount Etna (Italy)
16.40 – 17.00	<b>F. Gullace</b> , M. V. Avolio, S. Di Gregorio, A Cellular Model for Tsunami Simulation
17.00 – 17.20	<b>J. Pedace</b> , A. Senatore, G. Mendicino, Assessing the Reliability of a Fully Coupled Eco-Hydrological Model Based on the Macroscopic Cellular Automata Approach

**June 22, Saturday afternoon (16.00): Stream 19 (Hall B)**

<b>Chairman: Edward Gimadi</b>	
16.00 – 16.30	<b>A.G. Korotchenko</b> , V.M. Smoryakova, Multistage Mathematical Programming Problems
16.30 – 16.50	<b>S. Salatino</b> , S. Di Gregorio, Spatial Prisoner's Dilemma for Socio-Economic Dynamics
16.50 – 17.10	<b>V. Muliukha</b> , A. Ilyashenko, O. Zayats, V. Zaborovsky, Randomized Push-Out Mechanism in Priority Queuing Systems
17.10 – 17.30	<b>V. Valaitis</b> , Learning Motion Patterns of Robotic Arm