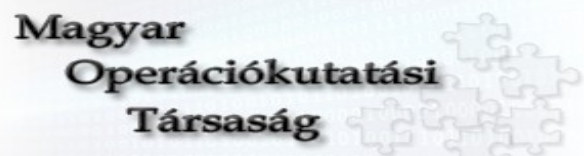


**20th Workshop on Advances in Continuous Optimization**  
**23-25 August 2023**

Corvinus University of Budapest, Hungary  
<http://www.europt.hu/>

**Conference Program**



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Anita Varga (Budapest University of Technology and Economics, Hungary)

## Stream organisers

Sorin-Mihai Grad, Ignacio Felipe Lara: Algorithms for nonconvex optimization  
Sándor Z. Németh, Giancarlo Bigi: Complementarity problems, variational inequalities and equilibria  
Andrea Cristofari, Francesco Rinaldi, Damiano Zeffiro: Derivative-free optimization  
Radu Ion Bot, Yura Malitsky: First-order optimization methods  
Milkós Pintér, Tamás Solymosi: Game theory  
Sonia Cafieri, Eligius Hendrix: Global optimization  
Geovani Grapiglia, Yurii Nesterov: High-order methods in convex optimization  
Zsolt Darvay, Marianna E.-Nagy, Goran Lesaja: Interior-point algorithms  
Gabriele Eichfelder: Multiobjective optimization  
Masoud Ahookshoh, Puya Latafat: Nonsmooth and nonconvex optimization  
Nuno Azevedo, Ioannis Baltas, Gerhard-Wilhelm Weber: Optimal and stochastic optimal control and games  
Paula Alexandra Amaral: Optimization for machine learning  
Alexandru Kristaly, Sándor Z. Németh: Optimization on manifolds  
Akhtar Khan, Miguel Sama, Christiane Tammer: Optimization, variational inequalities and uncertainty models  
Botond Bertók: P-graphs and mixed-integer programming  
Brandon Augustino, Tamás Terlaky: Quantum computing optimization  
Miguel Anjos, Etienne de Klerk: Semidefinite and conic approaches to discrete optimization problems  
Etienne de Klerk, Adrien Taylor: Worst-case analysis of iterative methods via semidefinite programming and Lyapunov stability

# Overview

## Wednesday 23 August

7:45 onwards	registration
8:15 – 9:00	opening
9:00 – 10:00	plenary – Russell Luke
10:15 – 11:30	parallel sessions
11:30 – 12:00	coffee break
12:00 – 13:15	parallel sessions
13:15 – 14:30	lunch
14:30 – 15:45	parallel sessions
15:45 – 16:15	coffee break
16:15 – 17:55	parallel sessions

## Thursday 24 August

9:00 – 10:15	parallel sessions
10:15 – 10:45	coffee break
10:45 – 12:00	parallel sessions
12:00 – 13:15	lunch
13:15 – 14:15	euopt fellowship lecture – Coralia Cartis
14:30 – 16:10	parallel sessions
18:00 – 21:00	social dinner

## Friday 25 August

8:30 – 9:30	plenary – Renata Sotirov
9:40 – 10:55	parallel sessions
10:55 – 11:30	coffee break
11:30 – 12:45	parallel sessions
12:45 – 14:00	lunch
14:00 – 15:15	parallel sessions
15:20 – 16:20	plenary – Aharon Ben-Tal
16:30 – 17:00	closing

## Parallel sessions

**Room**                      **C V**            **C VI**            **104**            **105**            **106**            **107**            **108**

### Wednesday 23 August

10:15 – 11:30	NNO 1	DFO 1	CPVIE 1	GO 1	OM 1	SCADO 1	
12:00 – 13:15	NNO 2	GT 1		GO 2	OM 2	SCADO 2	QCO 1
14:30 – 15:45	OML 1	MO 1	OVIUM 1	CONTR 1	NNO 3	WCA 1	IPA 1
16:15 – 17:55	FOM 1	MO 2	OVIUM 2	OML 2	AFNO	PGMIP	OSOCCG

### Thursday 24 August

9:00 – 10:15	QCO 2	MO 3	CPVIE 2	CONTR 2	NNO 4	SCADO 3	IPA 2
10:45 – 12:00	IPA 3	MO 4	OVIUM 3	GT 2	NNO 5	SCADO 4	QCO 3
14:30 – 16:10	CPVIE 3	FICO	OVIUM 4	DFO 2	NNO 6	FOM 2	OM 3

### Friday 25 August

9:40 – 10:55	QCO 4	GO 3	CPVIE 4	HOMCO	NNO 7	FOM 3	WCA 2
11:30 – 12:45	OVIUM 5	GT 3	QCO 5	MO 5	NNO 8	SCADO 5	WCA 3
14:00 – 15:15	DFO 3	MO 6	CONTR 3	OVIUM 6	NNO 9	SCADO 6	OM 4

### Streams

AFNO – Algorithms for nonconvex optimization
CPVIE – Complementarity problems, variational inequalities and equilibria
DFO – Derivative-free optimization
FICO – FICO
FOM – First-order optimization methods
GT – Game theory
GO – Global optimization
HOMCO – High-order methods in convex optimization
IPA – Interior-point algorithms
MO – Multiobjective optimization
NNO – Nonsmooth and nonconvex optimization
OSOCCG – Optimal and stochastic optimal control and games
OML – Optimization for machine learning
OM – Optimization on manifolds
OVIUM – Optimization, variational inequalities and uncertainty models
PGMIP – P-graphs and mixed-integer programming
QCO – Quantum computing optimization
SCADO – Semidefinite and conic approaches to discrete optimization problems
WCA – Worst-case analysis of iterative methods via semidefinite programming and Lyapunov stability
CONTR - Contributed talks

## Wednesday 23, 9:00-10:00

Lecture room C V (ground floor)

Chair: Marianna E.-Nagy

### Plenary

**Russell Luke:** *Proximal splitting algorithms in nonlinear spaces*

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## Wednesday 23, 10:15-11:30

Room: C V (ground floor)

Stream: **Nonsmooth and nonconvex optimization**

Session: **NNO 1 - Applications of nonsmooth optimization**

Chair: Alireza Kagbani

**Elaheh Lotfian:** *A new hybrid algorithm for multi-objective optimal spatial sampling design*

**Sofiane Tanji:** *Comparing real-world efficiency of primal and dual methods for convex hull pricing*

**Susan Ghaderi:** *Parameter-free nonsmooth unadjusted Langevin algorithm*

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Room: C VI (ground floor)

Stream: **Derivative free methods**

Session: **DFO 1 - Derivative free methods for stochastic optimization**

Chair: Vyacheslav Kungurtsev

**Andrea Cristofari:** *A derivative-free method for stochastic structured optimization problems*

**Damiano Zeffiro:** *A weak tail-bound probabilistic condition for function estimation in stochastic derivative-free optimization*

**Kwasssi Joseph Dzahini:** *Stochastic optimization in random subspaces: trust-region framework and subspace selection strategies*

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Room: 104 (first floor)

Stream: **Complementarity problems, variational inequalities and equilibria**

Session: **CPVIE 1 - Complementarity problems, variational inequalities and related topics**

Chair: Samir Kumar Neogy

**David Alexander Hulett:** *A second order system with asymptotically vanishing and Hessian-driven damping terms attached to a monotone inclusion*

**Samir Kumar Neogy:** *On some open problems in linear complementarity and its importance in pivotal algorithms*

**Yingchao Gao:** *The monotone extended second order cone and complementarity problem*

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Room: 105 (first floor)

Stream: **Global optimization**

Session: **GO 1 - Global optimization challenges**

Chair: Janos D. Pinter

**Anatolii Kosolap:** *An efficient method for finding the global minimum of large-scale multimodal optimization problems*

**Janos D. Pinter:** *Scalable global optimization challenges*

**Ramzi Jafar:** *The combined global-local method for box constraint optimization*

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**Room: 106 (first floor)**

**Stream: Optimization on manifolds**

**Session: OM 1 - Convex and combinatorial optimization on manifolds**

**Chair:** Glaydston Bento

**Lianghai Xiao:** *Exploring combinatorial problems with Riemannian manifold structures*

**Sándor Kajántó:** *Saturation of a nonlocal eigenvalue problem on Riemannian manifolds*

**Glaydston Bento:** *Fenchel conjugate via Busemann function on Hadamard manifolds*

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**Room: 107 (first floor)**

**Stream: Semidefinite and conic approaches to discrete optimization problems**

**Session: SCADO 1 - Semidefinite and conic approaches for discrete geometry**

**Chair:** David de Laat

**Marc-Christian Zimmermann:** *A semidefinite program for least distortion embeddings of flat tori into Hilbert spaces*

**Gergely Ambrus:** *On the density of planar sets avoiding unit distances*

**David de Laat:** *Three-point bounds for sphere packing*

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## **Wednesday 23, 12:00-13:15**

**Room: C V (ground floor)**

**Stream: Nonsmooth and nonconvex optimization**

**Session: NNO 2 - Structured nonconvex optimization**

**Chair:** Puya Latafat

**Mohammad Hamed:** *Adaptive nonsmooth trust-region methods via forward-backward envelope*

**Brecht Evens:** *Convergence of Douglas-Rachford splitting and primal-dual hybrid gradient in the absence of monotonicity*

**Alireza Kabgani:** *High-order proximal-point and Moreau envelope beyond convexity*

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**Room: C VI (ground floor)**

**Stream: Game theory**

**Session: GT 1 - Game theory and applications**

**Chair:** André Casajus

**Milkós Pintér:** *Computing the common prior*

**Imre Balog:** *Continuous generalized games*

**Giancarlo Bigi:** *Least cores and energy communities*

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**Room: 105 (first floor)**

**Stream: Global optimization**

**Session: GO 2 - Global optimization at work**

**Chair:** Eligius M.T. Hendrix

**Ivo Nowak:** *Decomposition methods for nonconvex MINLP and ML*

**Boglárka G.-Tóth:** *Efficient use of optimality conditions in interval Branch and Bound methods*

**Eligius M.T. Hendrix:** *On monotonicity in simplicial branch and bound*

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**Room: 106 (first floor)**

**Stream: Optimization on manifolds**

**Session: OM 2 - Convexity on manifolds and metric spaces**

**Chair:** Sándor Zoltán Németh

**Adriana Nicolae:** *Basic convex analysis in metric spaces with bounded curvature*

**Sándor Zoltán Németh:** *Convexity of non-homogeneous quadratic functions on the hyperbolic space*

**Jinzheng Zhu:** *Convexity of sets and quadratic functions on the hyperbolic space*

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**Room: 107 (first floor)**

**Stream: Semidefinite and conic approaches to discrete optimization problems**

**Session: SCADO 2 - Utilizing SDP & SOCP for integer single- and bilevel programs**

**Chair:** Melanie Siebenhofer

**Regina Schmidt:** *A semidefinite programming approach for the elementary shortest path problem*

**Melanie Siebenhofer:** *Finding the right balance: trade-offs in minimum cut edge expansion with SDPs*

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**Room: 108 (first floor)**

**Stream: Quantum computing optimization**

**Session: QCO 1 - Quantum computing and optimization I**

**Chair:** Brandon Augustino

**Simon Apers:** *Classical and quantum algorithms for logconcave sampling*

**András Gilyén:** *Quantum gradient computation with Gaussian noise*

**Rodolfo Alexander Quintero Ospina:** *Polyhedral structure of penalty constants in quadratic unconstrained binary optimization and applications to quantum computing*

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## **Wednesday 23, 14:30-15:45**

**Room: C V (ground floor)**

**Stream: Optimization for machine learning**

**Session: OML 1 - Optimization in regression models**

**Chair:** Paula Alexandra Amaral

**Antonio Consolo:** *Binary kernel logistic regression: sparsity and a SMO-type decomposition algorithm*

**Zeynep Suvak:** *Design of poisoning attacks on linear regression using bilevel optimization*

**Imre Polik:** *Xpress SLP + Xpress MIP = Xpress Global*

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**Room: C VI (ground floor)**

**Stream: Multiobjective optimization**

**Session: MO 1 - Bilevel and robust multi objective optimization**

**Chair:** Gabriele Eichfelder, Christian Günther

**Daniel Hoff:** *A global solution method for optimistic semivectorial bilevel problems*

**Gianluca Priori:** *An algorithm for bilevel multiobjective optimization*

**Gabriele Eichfelder:** *An epigraphical reformulation for uncertain multiobjective optimization*

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**Room: 104 (first floor)**

**Stream: Optimization, variational inequalities and uncertainty models**

**Session: OVIUM 1 - Bundle methods and portfolio optimization**

**Chair:** Elena-Andreea Florea

**Claudia Sagastizábal:** *Projective bundle methods, application to the progressive hedging algorithm*

**Marcel Marohn:** *Recent challenges in portfolio optimization*

**Tamanna Yadav:** *Optimality conditions and duality analysis for a class of conic semi-infinite optimization problem having vanishing constraints*

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**Room: 105 (first floor)**

**Stream: Contributed talks**

**Session: CONTR 1 - About feasibility**

**Chair:** Raphaël Chenouard

**Filiz Bilen:** *A new elastic filter for analyzing infeasibility in linear systems*

**József Dombi:** *A universal concept for solving different types of feasibility problems*

**Raphaël Chenouard:** *Using local optimization to early separate feasible solutions with a global branch-and-reduce-and-expand approach*

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**Room: 106 (first floor)**

**Stream: Nonsmooth and nonconvex optimization**

**Session: NNO 3 - Large-scale optimization**

**Chair:** Emanuel Laude

**Robin Kenis:** *Convex relaxations for large-scale manifold-valued nonconvex problems with graphical structure*

**Michael Sucker:** *Pac-Bayesian learning of optimization algorithms*

**Bas Symoens:** *ResQPASS: solving huge-scale bounded-variable least squares problems*

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**Room: 107 (first floor)**

**Stream: Worst-case analysis of iterative methods via semidefinite programming and Lyapunov stability**

**Session: WCA 1 - Worst-case analysis of iterative methods for non-convex problems via semidefinite programming**

**Chair:** Moslem Zamani

**Hadi Abbaszadehpeivasti:** *Conditions for linear convergence of the gradient method for non-convex optimization*

**Yassine Kamri:** *Performance estimation of block coordinate descent algorithms*

**Teodor Rotaru:** *Tight convergence rates of the gradient method on smooth nonconvex, convex and hypoconvex functions*

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**Room: 108 (first floor)**

**Stream: Interior point algorithms**

**Session: IPA 1 - Linear optimization and complementary problems**

**Chair:** Zsolt Darvay

**László Végh:** *Interior point methods are not (much) worse than simplex*

**Marianna E.-Nagy:** *The class of sufficient matrices*

**Anita Varga:** *A new long-step interior-point framework for solving sufficient linear complementarity problems*

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**Wednesday 23, 16:15-17:55**

**Room: C V (ground floor)**

**Stream: First order methods**

**Session: FOM 1 - Nonconvex optimization and applications**

**Chair:** Radu Ioan Bot, Yura Malitsky

**Alp Yurtsever:** *CCCP is Frank-Wolfe in disguise*

**Tam Le:** *Stochastic subgradient method for nonconvex minimization*

**Thi Lan Dinh:** *The cyclic relaxed Douglas Rachford algorithm for phase retrieval: theory and practice*

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**Room: C VI (ground floor)**

**Stream: Multiobjective optimization**

**Session: MO 2 - Numerical algorithms for multiobjective optimization**

**Chair:** Gabriele Eichfelder, Moritz Link

**Manuel Berkemeier:** *Multi-objective trust-region filter method for nonlinear constraints using inexact gradients*

**Everton Silva:** *Direct multisearch inexact restoration filter for biobjective optimization*

**Pierluigi Mansueto:** *Improved front steepest descent for multi-objective optimization*

**Tibor Illés:** *New algorithms for generating Pareto-optimal points of multi-objective optimization problems*

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**Room: 104 (first floor)**

**Stream: Optimization, variational inequalities and uncertainty models**

**Session: OVIUM 2 - Stochastic approximation for PDE-based models**

**Chair:** Miguel Sama

**Ali Akhtar Khan:** *A stochastic optimization framework for the stochastic elasticity imaging inverse problem of locating cancerous tumors*

**Hans-Jörg Starkloff:** *About the finite dimensional noise assumption*

**Carlos Escudero:** *Stochastic optimization in a Black-Scholes market under insider information*

**Marc Dambrine:** *Robust shape optimization framework for an inverse problem*

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**Room: 105 (first floor)**

**Stream: Optimization for machine learning**

**Session: OML 2 - Optimization in classification and learning**

**Chair:** Paula Alexandra Amaral

**Tiago Dias:** *A classification method based on a cloud of spheres*

**Giorgio Grani:** *Approximating decision trees with neural networks*

**Corrado Coppola:** *Solving large-scale non-convex optimization problems with objective function-free and block decomposition controlled minibatch algorithms*

**Rui Malha:** *Spherical SVM-type method for interval valued data*

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**Room: 106 (first floor)**

**Stream: Algorithms for nonconvex optimization**

**Session: AFNO - Algorithms for nonconvex optimization**

**Chair:** Ignacio Felipe Lara

**Szilard Laszlo:** *A forward-backward algorithm with different inertial terms for structured non-convex minimization problems*

**Sorin-Mihai Grad:** *Relaxed-inertial proximal point algorithms for problems involving strongly quasiconvex functions*

**Ignacio Felipe Lara:** *Proximal point type algorithms for nonconvex pseudomonotone equilibrium problems*

**David Benfield:** *Stackelberg games for adversarial learning: a model and solution method*

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**Room: 107 (first floor)**

**Stream: P-graphs and mixed-integer programming**

**Session: PGMIP - P-graphs and mixed-integer programming**

**Chair:** András Éles

**Ákos Orosz:** *Alternative problem formulations for P-graph-based optimal patient appointment planning*

**Marton Frits:** *P-graph based generation and solution of MILP models of industrial scheduling problems*

**Zsolt Ercsey:** *P-graph model for optimal consumption of household-size power plant generated energy*

**András Éles:** *Synergies of P-graphs and MILP in process design*

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**Room: 108 (first floor)**

**Stream: Optimal and stochastic optimal control and games**

**Session: OSOCC - Optimal and stochastic optimal control and games**

**Chair:** Gerhard-Wilhelm Weber

**Jacek Dominik Śledziński:** *Mathematical encouragement of companies to cooperate by using cooperative games with fuzzy approach*

**Gerhard-Wilhelm Weber:** *Optimal management of defined contribution pension funds under the effect of inflation, mortality and uncertainty*

**Kerem Ugurlu:** *Robust risk management operator*

**Betül Kalayci:** *Statement of mutual interaction between finance and human factors by various types of indicators*

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**Thursday 24, 9:00-10:15**

**Room: C V (ground floor)**

**Stream: Quantum computing optimization**

**Session: QCO 2 - Quantum computing and optimization II**

**Chair:** Brandon Augustino

**Dániel Szabó:** *A (simple) classical algorithm for estimating Betti numbers*

**Karthik Prakhya:** *Operator splitting for copositive programming via quantum annealers*

**Gereon Koßmann:** *Parameterized quantum circuits from an asymptotic point of view*

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**Room: C VI (ground floor)**

**Stream: Multiobjective optimization**

**Session: MO 3 - Recent advances in multiobjective optimization**

**Chair:** Gabriele Eichfelder, Manuel Berkemeier

**Lisa Krügel:** *Approximate multiobjective optimal control via model predictive control*

**Firdevs Ulus:** *Computing the recession cone of a convex upper image via convex projection*

**Maximilian Volk:** *Generalized polarity and weakest constraint qualifications in multi-objective optimization*

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**Room: 104 (first floor)**

**Stream: Complementarity problems, variational inequalities and equilibria**

**Session: CPVIE 2 - Algorithms for Nash equilibrium problems**

**Chair:** Axel Dreves

**Stefan Schwarze:** *A branch-and-prune algorithm for discrete Nash equilibrium problems*

**Valerio Giuseppe Sasso:** *Hierarchical jointly-convex Nash equilibrium problems with nonsmooth payoffs*

**Axel Dreves:** *Linear and superlinear convergence of a potential reduction algorithm for generalized Nash equilibrium problems*

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**Room: 105 (first floor)**

**Stream: Contributed talks**

**Session: CONTR 2 - Routing and queuing**

**Chair:** Chesoong Kim

**Britt van Veggel:** *A road network resilience optimization approach to improve healthcare accessibility*

**Mátyás Koniorczyk:** *Metropolitan-scale railway conflict management optimization with a quantum annealing hybrid solver*

**Chesoong Kim:** *Optimal design of queueing systems using queueing systems assistance*

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**Room: 106 (first floor)**

**Stream: Nonsmooth and nonconvex optimization**

**Session: NNO 4 - Non-Euclidean optimization**

**Chair:** Puya Latafat

**Emanuel Laude:** *Anisotropic proximal gradient*

**Masoud Ahookhosh:** *Non-Euclidean gradient methods: convergence, complexity, and applications*

**Max Nilsson:** *On the symmetry coefficient of Bregman functions*

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**Room: 107 (first floor)**

**Stream: Semidefinite and conic approaches to discrete optimization problems**

**Session: SCADO 3 - Linear optimization and applications**

**Chair:** Julio C. Góez

**Julio C. Góez:** *An outer approximation for a non-linear optimization model for the deployment of geo-distributed cloud applications*

**Kolos Ágoston:** *Mixed integer Linear programming formulation for minimum sum of clustering problem*

**Tatiana Tchemisova:** *On uniform LP duality of linear problems of copositive programming*

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**Room: 108 (first floor)**

**Stream: Interior point algorithms**

**Session: IPA 2 - Search directions for interior point algorithms**

**Chair:** Marianna E.-Nagy

**Petra Renáta Rigó:** *Predictor-corrector interior-point algorithms based on a new class of algebraically equivalent transformations*

**Roland Török:** *Implementation of predictor-corrector interior-point algorithms for solving sufficient linear complementarity problems*

**Zsolt Darvay:** *Predictor-corrector algorithm for symmetric cone horizontal linear complementarity problems based on a new class of algebraically equivalent transformations*

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**Thursday 24, 10:45-12:00**

**Room: C V (ground floor)**

**Stream: Interior point algorithms**

**Session: IPA 3 - Advances in interior point methods**

**Chair:** Goran Lesaja

**Xiaoni Chi:** *A predictor-corrector interior-point algorithm with new search directions for sufficient weighted linear complementarity problems*

**Goran Lesaja:** *Kernel-based full-Newton step interior-point algorithm for  $P^*(k)$ -WLCP*

**Yurii Nesterov:** *Set-limited functions and polynomial-time interior-point methods*

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**Room: C VI (ground floor)**

**Stream: Multiobjective optimization**

**Session: MO 4 - Numerical approaches in multiobjective optimization**

**Chair:** Gabriele Eichfelder

**Aly-Joy Ulusoy:** *An efficient hybrid evolutionary-deterministic method for the multi-objective design-for-control of water distribution networks*

**Christian Günther:** *Generalized conic scalarization in vector optimization*

**Philip de Castro:** *Pareto leap: an algorithm for biobjective mixed-integer optimization*

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**Room: 104 (first floor)**

**Stream: Optimization, variational inequalities and uncertainty models**

**Session: OVIUM 3 - Set valued optimization**

**Chair:** Christiane Tammer

**Marius Durea:** *Existence and stability conditions for weak set-equilibrium problems*

**Bahareh Khazayel:** *Nonlinear cone separation theorems in real topological linear spaces*

**Constantin Zalinescu:** *Some refinements of ABB type theorems in topological vector spaces*

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**Room: 105 (first floor)**

**Stream: Game Theory**

**Session: GT 2 - Cooperative game theory**

**Chair:** Miklós Pintér

**David Bartl:** *Conversion of a collusive oligopoly game into a Ppartition function form game, and application of cooperative game solution concepts to it*

**André Casajus:** *Second-order productivity, second-order payoffs, and the Banzhaf value*

**Juan Vidal-Puga:** *Stability in shortest path problems*

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**Room: 106 (first floor)**

**Stream: Nonsmooth and nonconvex optimization**

**Session: NNO 5 - Optimization and machine learning**

**Chair:** Silvia Villa

**Tejas Natu:** *Fast convergence of Nesterov-like continuous-time dynamics on Riemannian manifolds*

**Cristian Vega:** *Learning from data via overparametrization*

**Audrey Repetti:** *Unfolding proximal networks within plug and play algorithms: the faster, the better?*

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**Room: 107 (first floor)**

**Stream: Semidefinite and conic approaches to discrete optimization problems**

**Session: SCADO 4 - Semidefinite programming for discrete optimization**

**Chair:** Sven Polak, Daniel Brosch

**Dunja Pucher:** *A class of new cutting planes for SDP relaxations of stable set and coloring problems*

**Sven Polak:** *Semidefinite bounds for crossing numbers of  $K_{m,n}$*

**Andreas Spomer:** *The spherical packing problem in cylindrical spaces*

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Room: 108 (first floor)

Stream: **Quantum computing optimization**

Session: **QCO 3 - Quantum computing and optimization III**

Chair: Brandon Augustino

**Oscar Watts:** *Quantum semidefinite programming with thermal pure states*

**Janez Povh:** *Solving combinatorial optimization problems with quantum annealers*

**Arjan Cornelissen:** *Quantum algorithm for approximating partition functions*

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## Thursday 24, 13:15-14:15

Lecture room C V

Chair: Giancarlo Bigi, Sonia Cafieri

**Europt Fellowship Lecture**

**Coralia Cartis:** *Tensor methods for nonconvex optimization*

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## Thursday 24, 14:30-16:10

Room: C V (ground floor)

Stream: **Complementarity problems, variational inequalities and equilibria**

Session: **CPVIE 3 - Coperative optimization and applications**

Chair: Immanuel Bomze

**Markus Gabl:** *Concave tents: a new tool for optimizing nonlinear convex functions over nonconvex sets*

**Bo Peng:** *Conic relaxations for quadratic optimization problems with exact sparsity term*

**Immanuel Bomze:** *Extensions and formulations of the cp-rank in completely positive optimization*

**E. Alper Yildirim:** *Polyhedral properties of RLT relaxations of nonconvex quadratic programs and their implications on exact relaxations*

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Room: C VI (ground floor)

Stream: **FICO**

Session: **FICO**

Chair: Tibor Illés

**Imre Polik:** *FICO solvers*

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Room: 104 (first floor)

Stream: **Optimization, variational inequalities and uncertainty models**

Session: **OVIUM 4 - Random variational inequalities**

Chair: Akhtar Khan

**Miguel Sama:** *A new stochastic regularized second-order iterative scheme for optimal control and inverse problems in partial differential equations with random data*

**Mauro Passacantando:** *A random variational inequality model of international agricultural supply chain with a vulnerability analysis under disaster scenarios*

**Samuel Ward:** *Bilevel optimisation for selecting hyperparameters for nonlinear support vector machines*

**Annamaria Barbagallo:** *Inverse tensor variational formulation for a general control equilibrium problem*

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**Room: 105 (first floor)**

**Stream: Derivative free optimization**

**Session: DFO 2 - Advances in zeroth-order methods**

**Chair:** Andrea Cristofari

**Dână Davar:** *A derivative-free trust-region method based on finite-difference gradient approximations*

**Sara Venturini:** *Learning the right layers: a zeroth-order bi-level optimization strategy for semi-supervised learning on multilayer graphs*

**El Houcine Bergou:** *Minibatch stochastic three points method for unconstrained smooth minimization*

**Silvia Villa:** *Zeroth order descent with structured directions*

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**Room: 106 (first floor)**

**Stream: Nonsmooth and nonconvex optimization**

**Session: NNO 6 - Complexity of nonconvex optimization**

**Chair:** Masoud Ahookhosh

**Moslem Zamani:** *On the rate of convergence of the Difference-of-Convex Algorithm*

**Sadok Jerad:** *Yet another fast variant of Newton's method for nonconvex optimization*

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**Room: 107 (first floor)**

**Stream: First order methods**

**Session: FOM 2 - First order methods in convex optimization**

**Chair:** Radu Ioan Bot, Yura Malitsky

**Tatjana Chavdarova:** *A first order primal-dual method for solving constrained variational inequalities*

**Pontus Giselsson:** *Extended convergence conditions for the Chambolle-Pock algorithm*

**Shimrit Shtern:** *First-order methods for bi-level optimization*

**Hoomaan Maskan:** *Revisiting high-resolution ODEs for faster convergence*

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**Room: 108 (first floor)**

**Stream: Optimization on manifolds**

**Session: OM 3 - Isoperimetric problems and optimization on manifolds**

**Chair:** Alexandru Kristály

**Csaba Farkas:** *Lower semicontinuity of Kirchhoff-type energy functionals and spectral gaps on (sub)Riemannian manifolds*

**Alexandru Kristály:** *Sharp isoperimetric and Sobolev inequalities on  $CD(0,N)$  spaces: an optimal mass transport approach*

**Ágnes Mester:** *Sharp Sobolev inequalities on Finsler manifolds with nonnegative Ricci curvature*

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**Friday 25, 8:30-9:30**

**Lecture room C V**

**Chair:** Tamás Terlaky

**Plenary**

**Renata Sotirov:** *Mixed-integer semidefinite programming - a new perspective*

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**Friday 25, 9:40-10:55**

**Room: C V (ground floor)**

**Stream: Quantum computing optimization**

**Session: QCO 4 - Quantum computing and optimization IV**

**Chair:** Brandon Augustino

**Tamás Terlaky:** *Inexact feasible quantum interior point methods with exponentially improved complexity for linear optimization problems*

**Brandon Augustino:** *New perspectives on quantum interior point methods*

**Sander Gribling:** *Sublinear time quantum interior point methods for tall linear programs*

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**Room: C VI (ground floor)**

**Stream: Global optimization**

**Session: GO 3 - Advances in global optimization**

**Chair:** Sonia Cafieri

**Ana Maria Rocha:** *A penalty-based weighted Tchebycheff scalarization algorithm for designing polymer single screw extruders*

**Sonia Cafieri:** *A reliable global optimization approach for a covering problem*

**Frédéric Messiné:** *Hybridizing two linear relaxation methods in an interval branch-and-bound algorithm*

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**Room: 104 (first floor)**

**Stream: Complementarity problems, variational inequalities and equilibria**

**Session: CPVIE 4 - Games, equilibria and intertwined optimization problems**

**Chair:** Shunsuke Hayashi

**Attilio Marciánó:** *A novel equilibrium model for trust and reputation systems*

**Shunsuke Hayashi:** *Heterogeneous extension of 2-dimensional Fujita-Ogawa model in spatial economics*

**Maede Ramazannejad:** *On projected solutions for quasi equilibrium problems with non-self constraint map*

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**Room: 105 (first floor)**

**Stream: Higher order methods in convex optimization**

**Session: HOMCO - Higher order methods in convex optimization**

**Chair:** Yurii Nesterov

**Ion Necoara:** *Efficiency of higher-order algorithms for minimizing composite functions*

**Pavel Dvurechensky:** *Hessian barrier algorithms for non-convex conic optimization*

**Nikita Doikov:** *Super-universal regularized Newton method*

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**Room: 106 (first floor)**

**Stream: Nonsmooth and nonconvex optimization**

**Session: NNO 7 - Second order methods for nonsmooth optimization**

**Chair:** Behzad Azmi

**Bennet Gebken:** *A second-order gradient sampling method for nonsmooth optimization*

**Gulcin Dinc Yalcin:** *Incremental Quasi-Newton methods for nonsmooth and nonconvex optimization*

**Mikhail Karapetyants:** *Tikhonov regularization technique in continuous and discrete time optimization*

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**Room: 107 (first floor)**

**Stream: First order methods**

**Session: FOM 3 - Stochastic methods**

**Chair:** Radu Ioan Bot, Yura Malitsky

**Cheik Traoré:** *Asynchronous parallel block-coordinate forward-backward algorithm*

**Junchi Yang:** *From SGD to adaptive methods: benefits of adaptive gradient techniques*

**Ya-Ping Hsieh:** *Modern stochastic approximation techniques for machine learning*

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**Room: 108 (first floor)**

**Stream: Worst-case analysis of iterative methods via semidefinite programming and Lyapunov stability**

**Session: WCA 2 - Lyapunov-based analysis and design of first-order methods**

**Chair:** Pontus Gielsson

**Manu Upadhyaya:** *Automated tight Lyapunov analysis for first-order methods*

**Anton Åkerman:** *Optimizing first-order method parameters via backpropagation through the performance estimation problem*

**Céline Moucer:** *PEPit: a Python package for worst-case analysis of first-order optimization methods and their continuous versions*

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**Friday 25, 11:30-12:45**

**Room: C V (ground floor)**

**Stream: Optimization, variational inequalities and uncertainty models**

**Session: OVIUM 5 - Optimization under uncertainty**

**Chair:** Annamaria Barbagallo

**Chiang Kao:** *Mathematical programming with uncertain data*

**Christiane Tammer:** *Necessary optimality conditions in scalar optimization under uncertainty*

**Fabian Chlumsky-Hartmann:** *Robust solutions to multi-objective optimization problems with one uncertain objective*

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**Room: C VI (ground floor)**

**Stream: Game theory**

**Session: GT 3 - Computing the nucleolus**

**Chair:** Juan Vidal-Puga

**Márton Benedek:** *Computing the nucleolus: misconceptions, efficiency and applications*

**Tamás Solymosi:** *Computing the per-capita nucleolus in balanced games: the case of assignment games*

**Zsófia Dornai:** *TU-games with utility: the u-prenucleolus*

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**Room: 104 (first floor)**

**Stream: Quantum computing optimization**

**Session: QCO 5 - Quantum computing and optimization V**

**Chair:** Rodolfo Alexander Quintero Ospina, Brandon Augustino

**Massimiliano Incudini:** *Computing graph edit distance on quantum devices*

**Jakub Marecek:** *Quantum variational algorithms: warm starting, iteration complexity, and more*

**Zoltán Zimborás:** *Quantum computing and optimization talk*

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**Room: 105 (first floor)**

**Stream: Multiobjective optimization**

**Session: MO 5 - Multiobjective (mixed-)integer optimization**

**Chair:** Gabriele Eichfelder, Pierluigi Mansueto

**Daniele Patria:** *A new algorithm for detecting the nondominated set of a triobjective integer program*

**Moritz Link:** *An adaptive relaxation refinement scheme for multi-objective mixed-integer nonconvex optimization*

**Akshay Gupta:** *Branch-cut algorithms for multiobjective mixed-integer linear optimization*

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**Room: 106 (first floor)**

**Stream: Nonsmooth and nonconvex optimization**

**Session: NNO 8 - Nonsmooth optimization algorithms - part I**

**Chair:** Masoud Ahookhosh

**Puya Latafat:** *Adaptive linesearch-free proximal algorithms for convex optimization under local Lipschitz continuity of the gradient*

**Behzad Azmi:** *On the nonmonotone FBS algorithm for a class of infinite-dimensional nonsmooth nonconvex problems*

**Mikhail Solodov:** *Regularized smoothing for solution mappings of convex problems, with applications to two-stage stochastic programming and some hierarchical problems*

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**Room: 107 (first floor)**

**Stream: Semidefinite and conic approaches to discrete optimization problems**

**Session: SCADO 5 - Semidefinite programming for combinatorics and geometry**

**Chair:** Sven Polak, Daniel Brosch

**Jan Schwidessen:** *Solving max-cut and QUBO problems via low-rank methods*

**Daniel Brosch:** *The flag algebra of rooted binary trees*

**Willem de Muinck Keizer:** *The Lasserre hierarchy for equiangular lines with a fixed angle*

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**Room: 108 (first floor)**

**Stream: Worst-case analysis of iterative methods via semidefinite programming and Lyapunov stability**

**Session: WCA 3 - Interpolation constraints for worst-case bound computation**

**Chair:** Sébastien Colla

**Anne Rubbens:** *Tight representation of classes of non convex non smooth functions*

**Nizar Bousselmi:** *Interpolation conditions for linear operators and applications to performance estimation problems*

**Sébastien Colla:** *Exploiting agent symmetries for automatic performance analysis of distributed optimization methods*

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**Friday 25, 14:00-15:15**

**Room: C V (ground floor)**

**Stream: Derivative free optimization**

**Session: DFO 3 - Derivative free methods for challenging problems**

**Chair:** Damiano Zeffiro

**Filippo Marini:** *Design of a cooling system for gas turbines – a DFO industrial application*

**Andrea Brilli:** *Mixed interior-external point method for non-linear black-box optimization*

**Vyacheslav Kungurtsev:** *Retraction based direct search methods for derivative free Riemannian optimization*

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**Room: C VI (ground floor)**

**Stream: Multiobjective optimization**

**Session: MO 6 - Scalarization in multiobjective optimization**

**Chair:** Gabriele Eichfelder, Firdevs Ulus

**Giovanni Misitano:** *DESDEO: the open source framework for interactive multiobjective optimization - recent advancements and future plans*

**Daniel Dörfler:** *Polyhedral approximation of convex sets via homogenizations*

**Ina Lammel:** *Speed up the sandwiching algorithm using reduced costs*

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**Room: 104 (first floor)**

**Stream: Contributed talks**

**Session: CONTR 3 - A bit of quantum, a bit of markets**

**Chair:** Josh Fogg

**Péter Naszvadi:** *Hamming-packings vs NISQ devices*

**Manhaz Fakhrabadi:** *Sustainability cost on a multi-periodic game with incomplete information under cap-and-trade policy*

**Josh Fogg:** *Portfolio optimization for genetic selection*

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**Room: 105 (first floor)**

**Stream: Optimization, variational inequalities and uncertainty models**

**Session: OVIUM 6 - Subdifferential, optimality and penalization**

**Chair:** Marius Durea

**Elena-Andreea Florea:** *Generalized differentiation and optimality conditions in set optimization*

**Paul Schmölling:** *Penalisation in vector optimization*

**Radu Strugariu:** *Subdifferential calculus for set-valued mappings with applications in set optimization*

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**Room: 106 (first floor)**

**Stream: Nonsmooth and nonconvex optimization**

**Session: NNO 9 - Nonsmooth optimization algorithms - part II**

**Chair:** Moslem Zamani

**Mathurin Massias:** *Coordinate descent for SLOPE*

**Maria-Luiza Vladarean:** *Linearization algorithms for fully composite optimization*

**Titus Pinta:** *Operator splitting based Newton-type method for constrained optimization*

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**Room: 107 (first floor)**

**Stream: Semidefinite and conic approaches to discrete optimization problems**

**Session: SCADO 6 - Semidefinite and conic optimization**

**Chair:** Etienne De Klerk

**Olga Kuryatnikova:** *Exploiting sparsity in polynomial optimization for water networks*

**Burak Kocuk:** *Rational polyhedral outer-approximations of the second-order cone*

**Etienne De Klerk:** *SDP approaches for best polynomial approximation problems*

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**Room: 108 (first floor)**

**Stream: Optimization on manifolds**

**Session: OM 4 - Equilibrium problems on manifolds**

**Chair:** Orizon P Ferreira

**Joao Xavier da Cruz Neto:** *A new regularization of equilibrium problems on Hadamard manifolds via Busemann function*

**Boróka Oltean-Peter:** *Finding Nash-Stampacchia equilibrium points of Hirschleifer games on Hadamard manifolds using numerical algorithms*

**Orizon P Ferreira:** *Gradient projection method on the sphere, complementarity problems and copositivity*

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**Friday 25, 15:20-16:20**

**Lecture room C V**

**Chair:** Tibor Illés

**Plenary**

**Aharon Ben-Tal:** *An algorithm for maximizing a convex function based on its minimum, and beyond*

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