

Programme on
“Modern Maximal Monotone Operator Theory: From Nonsmooth Optimization
to Differential Inclusions”

January 28 – March 8, 2019

organized by

Heinz H. Bauschke (U of British Columbia), Radu I. Boţ (U Vienna), H el ene Frankowska (U
Paris VI), Michael Hinterm uller (Weierstrass Inst. Berlin), D. Russell Luke (U G ottingen)

Workshop 2 on

“Numerical Algorithms in Nonsmooth Optimization”

February 25 – March 1, 2019

• Monday, February 25, 2019

09:00 – 09:35 **Registration & Opening**

09:35 – 10:10 **Hedy Attouch**

Relaxed inertial proximal algorithms for monotone inclusions

10:10 – 10:40 *Coffee / Tea break*

10:40 – 11:15 **J er ome Bolte**

A multi-proximal method for convex composite optimization

11:15 – 11:50 **Shoham Sabach**

Lagrangian-based methods for nonconvex optimization problems

11:50 – 12:25 **D. Russell Luke**

Convergence analysis of algorithms for inconsistent nonconvex feasibility

12:25 – 14:00 *Lunch break*

14:00 – 14:35 **Aris Daniilidis**

Self-contracted curves and extensions

14:35 – 15:10 **Xiaoming Yuan**

An inexact Uzawa algorithmic framework for nonlinear saddle point problems

15:10 – 15:40 *Coffee / Tea break*

15:40 – 16:15 **Wotao Yin**

Scaled relative graph: a rigorous 2D geometric tool for contractive and nonexpansive operators

16:15 – 16:50 **Juan Peypouquet**

Lagrangian penalization scheme with parallel forward-backward splitting

17:00 – **Welcome Reception**

• Tuesday, February 26, 2019

09:00 – 09:35 **Marc Teboulle**

Analysis of proximal methods for composite minimization

09:35 – 10:10 **Christian Kanzow**
Safeguarded augmented Lagrangian methods in finite and infinite dimensions

10:10 – 10:40 *Coffee / Tea break*

10:40 – 11:15 **Peter Richtarik**
SEGA: variance reduction via gradient sketching

11:15 – 11:50 **Ion Necoară**
Minibatch stochastic first order methods for composite convex optimization

11:50 – 12:25 **Mathias Staudigl**
On the convergence of stochastic forward-backward-forward algorithms with variance reduction in pseudo-monotone variational inequality problems

12:25 – 14:00 *Lunch break*

14:00 – 14:35 **Coralia Cartiș**
Dimensionality reduction techniques for global optimization

14:35 – 15:10 **Immanuel Bomze**
Non-convex min-max fractional quadratic problems under quadratic constraints: copositive relaxations

15:10 – 15:40 *Coffee / Tea break*

15:40 – 16:15 **Amir Beck**
On the convergence to stationary points of deterministic and randomized feasible descent directions methods

16:15 – 16:50 **Volkan Cevher**
Storage optimal semidefinite programming

• **Wednesday, February 27, 2019**

09:00 – 09:35 **Patrick Combettes**
Splitting monotone inclusions

09:35 – 10:10 **Jonathan Eckstein**
Projective splitting with cocoercive operators

10:10 – 10:40 *Coffee / Tea break*

10:40 – 11:15 **Szilárd László**
A gradient type algorithm with backward inertial steps for a nonconvex minimization

11:15 – 11:50 **Otmar Scherzer**
Convergence rates of first and higher order dynamics for solving linear ill-posed problems

11:50 – 12:25 **Elena Resmeriță**
Sparsity regularization: a general non-convex approach

12:25 – 14:00 *Lunch break*

14:00 – 14:35 **Shin-ya Matsushita**
Rates of asymptotic regularity for the forward-backward splitting algorithm

14:35 – 15:10 **Isao Yamada**
An approximate simultaneous matrix-diagonalization via alternating projection

15:10 – 15:40 *Coffee / Tea break*

15:40 – 16:15 **Walaa Moursi**
Reflected resolvents in the Douglas-Rachford algorithm: order of the operators and linear convergence

16:15 – 16:50 **Minh Đào**
Adaptive Douglas-Rachford splitting algorithm and applications

18:00 – **Workshop Dinner at Heuriger Schübel Auer**

• **Thursday, February 28, 2019**

09:00 – 09:35 **Karl Kunisch**

Monotone and primal-dual algorithms for optimization problems involving ℓ^p and ℓ^p -like functionals with $p \in [0, 1)$

09:35 – 10:10 **Michael Hintermüller**

(Pre)Dualization, dense embeddings of convex sets, and applications in image processing

10:10 – 10:40 *Coffee / Tea break*

10:40 – 11:15 **Stefan Ulbrich**

Computing a subgradient for the solution operator of the obstacle problem and numerical realization

11:15 – 11:50 **Dominikus Noll**

Optimization strategies to control infinite-dimensional systems

11:50 – 12:25 **Michael Ulbrich**

An inexact bundle method for nonconvex nondifferentiable minimization in Hilbert space

12:25 – 14:35 *Lunch break*

14:35 – 15:10 **Thomas Surowiec**

A primal-dual algorithm for PDE-constrained optimization under uncertainty

15:10 – 15:40 *Coffee / Tea break*

15:40 – 16:15 **Matthew Tam**

Forward-backward splitting without cocoercivity

16:15 – 16:50 **Yura Malitsky**

On a new method for monotone inclusions

• **Friday, March 1, 2019**

09:00 – 09:35 **Jean-Christophe Pesquet**

Deep unfolded proximal interior point algorithm

09:35 – 10:10 **Sebastian Banert**

How to accelerate convex optimisation with machine learning

10:10 – 10:40 *Coffee / Tea break*

10:40 – 11:15 **Silvia Villa**

Thresholding gradient algorithms in Hilbert spaces: support identification and linear convergence

11:15 – 11:50 **Pontus Giselsson**

Performance estimation in operator splitting methods

11:50 – 12:25 **Panos Patrinos**

A universal majorization-minimization framework for the convergence analysis of nonconvex proximal algorithms

12:25 – 13:00 **Tuomo Valkonen**

First-order methods and model splitting techniques for non-convex non-smooth optimisation

13:00 – 13:10 **Closing**

All talks take place at ESI, Boltzmann Lecture Hall!