

Workshop

From Modeling and Analysis to Approximation and Fast Algorithms



Hasenwinkel

December 02-06, 2022

Organizing Committee

Irina Kmit (Humboldt-Universität Berlin)

Dirk Langemann (Technische Universität Braunschweig)

Jürgen Prestin (Universität zu Lübeck)

Barbara Zwicknagl (Humboldt-Universität Berlin)

A meeting within the “VolkswagenStiftung” project:

From Modeling and Analysis to Approximation

Program Overview

Time	Friday	Time	Saturday	Sunday	Monday	Tuesday
		09:00 - 10:00	Catala	Rieger	Christensen	Filbir
		10:00 - 10:30	Burylko	Sytnyk	Hasannasab	Stepaniuk
		10:30 - 11:00	Coffee break			
		11:00 - 11:30	(Beinert) ¹⁾	Derkach	Savchuk	Karpova
		11:30 - 12:00	Buryachenko	Kovalyov	Rovenska	Käße­model
		12:00 - 12:30	Nguyen	Karabash	Bartel	
		12:30 - 14:30	Lunch break			
15:00-15:10	Opening	14:30 - 15:00	Langemann		Stasyuk	
15:10-16:10	Kolomoitsev	15:00 - 15:30	Tütting	Walking-tour	Lüttgen	
		15:30 - 16:00	Schoppert		Panchuk	
16:10-16:50	Coffee break	16:00 - 16:45	Coffee break			
16:50-17:20	Tasche	16:45 - 17:15	(Ryzhkova) ¹⁾	Karpenko	Kholkin	
17:20-17:50	Kmit	17:15 - 17:45	Fastovska	Melnyk	Savchenko	
17:50-18:20	Tkachenko	17:45 - 18:15	Zavarzina	Veselovska	Dovgoshey	
		18:15 - 19:00	Group leader meeting	Discussion of future research		

¹⁾ cancelled at short notice

All **talks** will take place at *Remise*

Breakfast and **Lunch** will be served at the dining room at *Schloss*

Dinner will be served at *Marstall* or at *Schloss*

Program

Friday

15.00 - 15.10 *Opening*

Chair: Irina Kmit

15.10 - 16.10 **Yurii Kolomoitsev**

Sharp L_p error estimates for approximation by sampling operators

16.10 - 16.50 *Coffee break*

Chair: Barbara Zwicknagl

16.50 - 17.20 Manfred Tasche

On regularized Shannon sampling formulas

17.20 - 17.50 Irina Kmit

Hopf bifurcation for general 1D semilinear wave equations with delay

17.50 - 18.20 Viktor Tkachenko

Almost periodic solutions of damped wave equation with impulsive action

Saturday

Chair: Frank Filbir

09.00 - 10.00 **Paul Catala**
On some approximations of the sparse super-resolution problem

10.00 - 10.30 Olexandr Burylko
Symmetry breaking yields chimeras in two small populations of Kuramoto-type oscillators

10.30 - 11.15 *Coffee Break*

Chair: Viktor Savchuk

11.15 - 11.45 Kateryna Buryachenko
Maximum principle for fourth-order hyperbolic equations with applications

11.45 - 12.15 Thu Hien (Hisha) Nguyen
Entire functions from the Laguerre-Pólya class and Hutchinson's intervals

12.30 - 14.30 *Lunch*

Chair: Oleksiy Dovgoshey

14.30 - 15.00 Dirk Langemann
Discretization methods as discrete models of a continuous reality

15.00 - 15.30 Katja Tüting
Modeling the measurement problem - examples, numerics and uncertainty

15.30 - 16.00 Frederic Schoppert
Direction sensitive analysis of higher order jump discontinuities along circles on the sphere

16.00 - 16.45 *Coffee break*

Chair: Ole Christensen

16.45 - 17.45 Tamara Fastovska (joint with Irina Ryzhkova)
Qualitative properties of solutions to a nonlinear transmission problem for an elastic Bresse beam

17.45 - 18.15 Olesla Zavarzina
Non-expansive bijections and expand-contract plasticity

18.15 - 19.00 *Group leader meeting*

Sunday

Chair: Hanna Veselovska

09.00 - 10.00 **Christian Rieger**
Kernel-based Bayesian methods

10.00 - 10.30 Dmytro Sytnyk
Numerical method for efficient evaluation of Hermite kernel with application to data classification

10.30 - 11.00 *Coffee Break*

Chair: Paul Catala

11.00 - 11.30 Volodymyr Derkach
Riesz basis property for indefinite Sturm-Liouville operator

11.30 - 12.00 Ivan Kovalyov
Generalized Darboux transformation of the differential expressions and Weyl-Titchmarsh m -coefficient

12.00 - 12.30 Illia Karabash
Leontovich boundary conditions for the Maxwell system and their randomization

12.30 - 14.30 *Lunch*

14.30 *Walking-tour*

16.00 - 16.45 *Coffee break*

Chair: Tamara Fastovska

16.45 - 17.15 Iryna Karpenko
A Riemann-Hilbert problem approach to the modified Camassa-Holm equation on a step like background

17.15 - 17.45 Oleh Melnyk
Alternating amplitude flow for blind ptychography and its convergence

17.45 - 18.15 Hanna Veselovska
Digital halftoning via weighted sigma-delta quantization

18.15 - 18.45 *Discussion of future research*

Monday

Chair: Christian Rieger

09.00 - 10.00 **Ole Christensen**
Dynamical sampling and approximate frame representations

10.00 - 10.30 Marzieh Hasannasab
Dynamical sampling and phase retrieval

10.30 - 11.00 *Coffee break*

Chair: Illia Karabash

11.00 - 11.30 Viktor Savchuk
Exact estimates for K -functionals in the Hardy space on the unit ball of $\mathbb{C}^d$

11.30 - 12.00 Olga Rovenska
An extremal problem for Cesàro means on some class of holomorphic functions

12.00 - 12.30 Felix Bartel
Using subsampled quadrature points for function reconstruction

12.30 - 14.30 *Lunch*

Chair: Yurii Kolomoitsev

14.30 - 15.00 Serhii Stasyuk
Sampling in limiting Besov spaces

15.00 - 15.30 Kai Lüttgen
Properties and embeddings of Sobolev spaces of dominating mixed smoothness

15.30 - 16.00 Anastasiia Panchuk
Border collision bifurcations for chaotic attractors in 1D maps with multiple discontinuities

16.00 - 16.45 *Coffee break*

Chair: Volodymyr Derkach

16.45 - 17.15 Aleksandr Kholkin
Fundamental system of solutions of a differential equation with a block-operator potential

17.15 - 17.45 Mariia Savchenko
On the asymptotic behavior of solutions to non-uniformly elliptic equations with non-standard growth

17.45 - 18.15 Oleksiy Dovgoshey
Permutations and combinatorial similarities of metric spaces. Why four?

Tuesday

Chair: Manfred Tasche

09.00 - 10.00 **Frank Filbir**

Shift invariant spaces related to the special affine Fourier transform

10.00 - 10.30 Tania Stepaniuk

Edge detection with scaled-discretised wavelets on the sphere

10.30 - 11.00 *Coffee break*

Chair: Dirk Langemann

11.00 - 11.30 Olga Karpova

*Nonlinear dynamics of Bose-Einstein condensates in branched domains:
A metric graph based approach*

11.30 - 12.00 Bernd Käßemodel

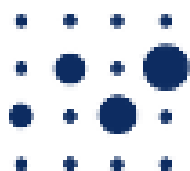
Basics of quantum computing

Participants

Felix Bartel	Technische Universität Chemnitz
Robert Beinert ¹⁾	Technische Universität Berlin
Kateryna Buryachenko	Humboldt-Universität Berlin and Donetsk
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Schloss Hasenwinkel



TAGUNGSHOTEL DER WIRTSCHAFT