

Symposium on Inverse Problems

From experimental data
to models and back

**University of Potsdam
Campus Griebnitzsee**



September
19th-21st
2 0 2 2

Funded by
DFG



As part of
the newly established

Potsdam DA Days

**Invited
Speakers:**

Gilles Blanchard

Université Paris Saclay

Marc Bocquet

École des Ponts ParisTech

Cristina Butucea

ENSAE, IP Paris

Elizabeth Qian

California Institute of Technology

Tim Salditt

University of Göttingen

Georg Stadler

Courant Institute of Mathematical Sciences,
NY University

Get all Information:

<https://www.uni-goettingen.de/en/654659.html>

Monday, September 19, 2022

09:00

REGISTRATION & WELCOME

09:30

Plenary Talk 1 | Lecture hall H03 & H04
(Chair: Sebastian Reich)
Current Challenges in Phase Retrieval and Tomographic Reconstruction: Inverse Problems at Work
Tim Salditt (University of Göttingen, Göttingen, GER)

10:20

COFFEE BREAK

Session 1 | Lecture hall H03
PDE 1
(Chair: Jan-F. Pietschmann)

Session 2 | Lecture hall H04
Computational Approaches 1
(Chair: Mihaela Pricop-Jeckstadt)

10:50

Reconstruction of Inclusions in Elastic Bodies Based on Experimental Data
(Sarah Eberle, Frankfurt)

Challenges of dynamic data: joint reconstruction and motion estimation in MPI
(Lena Zdun, Hamburg)

11:20

Quantitative elastic diffraction tomography
(Bochra Mejri, Linz)

Multilevel Optimization for Inverse Problems
(Simon Weissmann, Heidelberg)

11:50

On Recovering the Fractional Damping Operator in a Wave Equation from Time Trace Data
(William Rundell, Texas)

An augmented Krylov subspace method for atmospheric tomography
(Bernadett Stadler, Linz)

12:20

LUNCH

14:00

Plenary Talk 2 | Lecture hall H03 & H04
(Chair: Melina Freitag)
Balanced truncation for Bayesian inference
Elizabeth Qian (California Institute of Technology, Pasadena, USA)

14:50

COFFEE BREAK

Session 3 | Lecture hall H03
Bayesian Methods 1
(Chair: Simon Weissmann)

Session 4 | Lecture hall H04
Machine Learning
(Chair: Claudia Schillings)

15:20

Geodesic slice sampling on the sphere
(Mareike Hasenpflug, Passau)

Multi-armed bandit problem with side observations
(Tomáš Kocák, Potsdam)

15:50

Bayesian Structure Determination from Single Molecule X-Ray Diffraction
(Steffen Schulze, Göttingen)

Sequential Learning
(Karen Seidel, Potsdam)

16:20

Bayesian hypothesis testing in statistical inverse problems
(Remo Kretschmann, Würzburg)

16:50

COFFEE BREAK

17:20

Poster Lightning

17:50

ICE BREAKER & POSTER SESSION

Tuesday, September 20, 2022

09:00	Plenary Talk 3 Lecture hall H03 & H04 (Chair: Ronny Ramlau) Bayesian online algorithms for learning data-driven models of chaotic dynamics Marc Bocquet (CEREA, École des Ponts & EdF R&D, Île-de-France, FRA)	
09:50	<i>COFFEE BREAK</i>	
10:20	Plenary Talk 4 Lecture hall H03 & H04 (Chair: Axel Munk) Simultaneous adaptation for several criteria in inverse learning problems using an extended Lepskiĭ principle (Gilles Blanchard, Université Paris, FRA)	
	Session 5 Lecture hall H03 <i>Machine Learning and PDE</i> (Chair: Han Cheng Lie)	Session 6 Lecture hall H04 <i>Computational Approaches 2</i> (Chair: Frank Werner)
11:20	Learning a regularized solution from infinitely many trial functions (Naomi Schneider, Siegen)	Subaperture-based Digital Aberration Correction for OCT (Simon Hubmer, Linz)
11:50	Data driven gradient flows (Jan-F. Pietschmann, Chemnitz)	Numerical algorithms for a stochastic realization problem (Martin Hanke-Bourgeois, Mainz)
12:20	<i>GROUP PHOTO</i>	
12:30	<i>LUNCH</i>	
14:00	Plenary Talk 5 Lecture hall H03 & H04 (Chair: Markus Reiß) Off-the-grid estimation of sparse mixtures (Cristina Butucea, ENSAE, IP Paris, FRA)	
14:50	<i>COFFEE BREAK</i>	
	Session 7 Lecture hall H03 <i>Bayesian Approaches 2</i> (Chair: Vladimir Spokoiny)	Session 8 Lecture hall H04 <i>Regularization of Inverse Problems in PDEs</i> (Chair: Tim Jahn)
15:20	Adaptive MCMC for doubly intractable distributions (Julian Hofstadler, Passau)	Tikhonov Regularization - Low order convergence Rates for a discrepancy principle under low order source conditions in the oversmoothing case (Chantal Klinkhammer, Siegen)
15:50	Overconfidence and randomisation in numerical Bayesian inverse problems (Han Cheng Lie, Potsdam)	Variational Source Condition for an Inverse Source Problem (Philipp Mickan, Göttingen)
16:20	Optimal rates of convergence for functional data analysis with indirect observations (Mihaela Pricop-Jeckstadt, Bucharest)	Ill-posedness of time-dependent inverse problems in Lebesgue-Bochner spaces (Thomas Schuster, Saarbrücken)
16:50	<i>COFFEE BREAK</i>	
17:20	GIP Award for the best PhD thesis (1 h)	

Wednesday, September 21, 2022

09:00	Plenary Talk 6 Lecture hall H03 & H04 (Chair: Thorsten Hohage) Optimal design of experiments for Bayesian inverse problems governed by PDEs (Georg Stadler, NY University, New York, USA)	
09:50	COFFEE BREAK	
	Session 9 Lecture hall H03 PDE 2 (Chair: William Rundell)	Session 10 Lecture hall H04 Comput/Bay/PDE (Chair: Martin Hanke-Bourgeois)
10:20	An Improved Adaptive Spectral Inversion for Inverse Problems (Yannik Gleichmann, Basel)	Solving a quantitative passive imaging problem in helioseismology by iterative holography: Inversions for solar differential rotation (Björn Müller, Göttingen)
10:50	Some inverse problems for wave equations with fractional derivative attenuation (Barbara Kaltenbacher, Klagenfurt)	Greedy sensor placement for Bayesian inverse problems via model order reduction (Nada Cvetkovic, Eindhoven)
11:20	Optical diffraction tomography with an object rotated into arbitrary (Michael Quellmalz, Berlin)	Optimal design of experimental conditions for a Bayesian inverse problem in photoacoustic imaging (Karina Koval, Heidelberg)
11:50	COFFEE BREAK	
	Session 11 Lecture hall H03 Regularization (Chair: Simon Hubmer)	Session 12 Lecture hall H04 High Dimensional IP (Chair: Ralf Engbert)
12:20	Weighted regularization for identifying sources from Cauchy boundary data (Bjørn F. Nielsen, Ås)	Modeling Eye Movement: What DNNs And Biological Models Can Teach Each Other (Lisa Schwetlick, Potsdam)
12:50	Discretisation-adaptive regularization of statistical inverse (Tim Jahn, Bonn)	Sparse optimization methods for infinite-dimensional inverse problems (Marcello Carioni, Enschede)
13:20	CLOSING REMARKS & LUNCH	