SFB Conference "Tomography Across the Scales"

Bifeb, Strobl, Austria

June 16 – 21, 2025

Program

Monday, June 16

14:00 – 18:00	Individual Arrival
18:00 – 20:00	**Opening Dinner**

Tuesday, June 17

09:00 – 12:30	**Morning Session: Inverse Problems, Part 1** Chairing: Otmar Scherzer & Peter Elbau
09:00 – 09:35	*Statistical microlocal analysis* *Alexander Katsevitch*
09:45 – 10:20	*Spherical Radon transforms with smoothly varying radii and applications to tomography* *Eric Todd Quinto*
10:30 – 11:00	**Break**
11:00 – 11:35	*Utilising Monte Carlo method for light transport in optical tomography* *Tanja Tarvainen*
12:30 – 14:00	**Lunch Break**

14:00 – 18:00	**Afternoon Session: Astrophysics** Chairing: Glenn van de Ven
14:00 – 14:35	*A triaxial and vertically oriented dark matter halo of the Milky Way shaped by minor mergers* *Ling Zhu*
14:45 – 15:20	*Inverse Modelling of Galaxies Across Scales: From Simulations to Observations with Modern Computational Tools* *Tobias Buck*
15:30 – 15:55	*Mathematical methods for wide field of view adaptive optics in ophthalmology* *Victoria Laidlaw*
16:00 – 16:30	**Break**
16:30 – 17:05	*Focusing on the stars: The crucial role of adaptive optics in astronomy* *Sebastian Kamann*
17:15 – 17:40	*Collecting fossil records of galaxy formation* *Stefanie Reiter*
18:00 – 19:30	**Dinner**
19:30 – 20:30	**Meeting of the Principal Investigators**

Wednesday, June 18

09:00 – 12:30	**Morning Session: Medical Imaging** Chairing: Wolfgang Drexler
09:00 – 09:25	*Comparing Algorithms for Galaxy Reconstructions* *Prashin Jethwa*
09:30 – 09:55	*Longitudinal AO-OCT imaging of the retina in diabetic eyes using the P-WFS* *Elisabeth Brunner*
10:00 – 10:25	*Quantitative Optical Coherence Elastography Facilitating Axial and Lateral Sample Deformation* *Lisa Krainz*
10:30 – 11:00	**Break**
11:00 – 11:25	*On the Intensity-based Inversion Method for Quantitative Optical Coherence Elastography* *Ekaterina Sherina*
11:30 – 11:55	*A Gauss-Green formula approach for refractive index recovery from OCT* *Cristóbal Villalobos Guillén*
12:30 – 14:00	**Lunch Break**

14:00 – 18:00	**Afternoon Session: Mathematical Imaging** Chairing: Gabriele Steidl
14:00 – 14:35	*Seeing through light beyond space and time: advances in fluorescence microscopy image reconstruction* *Luca Calatroni*
14:45 – 15:20	*On Modulo Radon Transform Based Tomography* *Matthias Beckmann*
15:30 – 16:00	**Break**
16:00 – 16:35	*Quantitative inverse problem in ultrasound imaging for viscoelastic anisotropic media* *Florian Faucher*
16:40 – 17:05	*Fast and Accurate Approximation of High-Dimensional Radial Kernels via Slicing* *Michael Quellmalz*
17:10 – 17:35	*Modeling Molecule and Cluster Movements via generative modeling and SDEs* *Christian Wald*
18:00 – 19:30	**Dinner**
19:30 – 20:30	**Meeting of the SFB Members**

Thursday, June 19

09:00 – 12:30	**Morning Session: Optical Tomography** Chairing: Monika Ritsch-Marte
09:00 – 09:35	*Optical microtomography: challenges for improved resolution and functionalization* *Olivier Haeberlé*
09:45 – 10:20	*Advancements in large scale optical tomography* *Jeroen Kalkman*
10:30 – 11:00	**Break**
11:00 – 11:25	*Optical Tomography by Rotation in Acoustofluidic Platforms* *Mia Kvåle Løvmo*
11:30 – 11:55	*When Do Measurements Reveal How a Sample Rotates? The Challenge of Uniqueness in Rigid Motion Reconstruction* *Denise Schmutz*
12:00 – 12:25	*Phase Retrieval Using the Transport of Intensity Equation* *Christina U. Strohmenger*
12:30 – 14:00	**Lunch Break**

14:00 – 18:00	**Afternoon activity** *Excursion in the surroundings of Wolfgangsee*
18:00 – 19:30	**Dinner**

Friday, June 20

09:00 – 12:30	**Morning Session: Inverse Problems, Part 2** Chairing: Ronny Ramlau
09:00 – 09:35	*PiLocNet: Physics-informed neural network on 3D localization with rotating point spread function* *Raymond H. Chan*
09:45 – 10:20	*Numerical computation of wave oscillations for helioseismology: from radially symmetric models to differential rotation* *Ha Pham*
10:30 – 11:00	**Break**
11:00 – 11:25	*The SCD Semismooth* Newton method for the efficient minimization of Tikhonov functionals* *Simon Hubmer*
11:30 – 11:55	*The inverse problem of wavefront reconstruction for atmospheric tomography in Adaptive Optics* *Yutong Wu*
12:00 – 12:25	*Extracting Features from Galaxy Orbit Distributions* *Ioannis Martikos*
12:30 – 14:00	**Lunch Break**

14:00 – 18:00	**Afternoon Session: Super-resolution Microscopy** Chairing: Gerhard Schütz
14:00 – 14:35	*Structure and Dynamics of Lipid Bilayers* *Ingo Gregor*
14:40 – 15:05	*Fluorophore dipole orientation characterization* *Montse Martinez Lopez*
15:10 – 15:35	*Algebraic circle fitting algorithms for 2-dimensional noise correlated case with application to size oligomeric biomolecules on cryo single molecule localization microscopy* *Yakun Dong & Zheyi Yang*
15:40 – 18:00	**Break & Group meetings**
18:00 – 19:30	**Closing Dinner**

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