

# SFB Conference “Tomography Across the Scales”

Bifeb, Strobl, Austria

June 16 – 20, 2025

## Program

### Monday, June 16

14:00 – 18:00 Individual Arrival

18:00 – 20:00  **Welcome 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 *On the identification of early tumor states in some nonlinear reaction-diffusion models*

*Elena Beretta*

10:30 – 11:00  **Break**

11:00 – 11:35 *Spherical Radon transforms with smoothly varying radii and applications to tomography*

*Eric Todd Quinto*

11:45 – 12:20 *Utilising Monte Carlo method for light transport in optical tomography*

*Tanja Tarvainen*

12:30 – 14:00  **Lunch Break**

14:00 – 18:00	 <b>Afternoon Session - Astrophysics</b>  Chairing: Glenn van de Ven
14:00 – 14:35	<i>A triaxial and vertically oriented dark matter halo of the Milky Way shaped by minor mergers</i> <i>Ling Zhu</i>
14:45 – 15:20	<i>Inverse Modelling of Galaxies Across Scales: From Simulations to Observations with Modern Computational Tools</i> <i>Tobias Buck</i>
15:30 – 16:00	 <b>Break</b>
16:00 – 16:35	<i>Focusing on the stars: The crucial role of adaptive optics in astronomy</i> <i>Sebastian Kamann</i>
16:40 – 17:05	<i>Comparing Algorithms for Galaxy Reconstructions</i> <i>Prashin Jethwa</i>
17:10 – 17:35	<i>Collecting fossil records of galaxy formation</i> <i>Stefanie Reiter</i>
18:00 – 19:30	 <b>Dinner</b>
19:30 – 20:30	 <b>Meeting of the Principal Investigators</b>

## Wednesday, June 18

09:00 – 12:30	 <b>Morning Session - Mathematical Imaging</b>  Chairing: Gabriele Steidl
09:00 – 09:35	<i>Seeing through light beyond space and time: advances in fluorescence microscopy image reconstruction</i> <i>Luca Calatroni</i>
09:45 – 10:20	<i>Quantitative inverse problem in ultrasound imaging for viscoelastic anisotropic media</i> <i>Florian Faucher</i>
10:30 – 11:00	 <b>Break</b>
11:00 – 11:35	<i>On Modulo Radon Transform Based Tomography</i> <i>Matthias Beckmann</i>
11:40 – 12:00	<i>Fast and Accurate Approximation of High-Dimensional Radial Kernels via Slicing</i> <i>Michael Quellmalz</i>
12:05 – 12:25	<i>Modeling Molecule and Cluster Movements via generative modeling and SDEs</i> <i>Christian Wald</i>
12:30 – 14:00	 <b>Lunch Break</b>

14:00 – 18:00	 <b>Afternoon Session - Medical Imaging</b>  Chairing: Wolfgang Drexler
14:00 – 14:25	<i>Longitudinal AO-OCT imaging of the retina in diabetic eyes using the P-WFS</i> <i>Elisabeth Brunner</i>
14:30 – 14:55	<i>Mathematical methods for wide field of view adaptive optics in ophthalmology</i> <i>Victoria Laidlaw</i>
15:00 – 15:25	<i>Quantitative Optical Coherence Elastography Facilitating Axial and Lateral Sample Deformation</i> <i>Lisa Krainz</i>
15:30 – 16:00	 <b>Break</b>
16:00 – 16:25	<i>Parameter identification in quantitative optical coherence tomography</i> <i>Leopold Veselka</i>
16:30 – 16:55	<i>On the Intensity-based Inversion Method for Quantitative Optical Coherence Elastography</i> <i>Ekaterina Sherina</i>
17:00 – 17:25	<i>A Gauss-Green formula approach for refractive index recovery from OCT</i> <i>Cristóbal Villalobos Guillén</i>
18:00 – 19:30	 <b>Dinner</b>

## Thursday, June 19

09:00 – 12:30	 <b>Morning Session - Optical Tomography</b>  Chairing: Monika Ritsch-Martel
09:00 – 09:35	<i>Optical microtomography: challenges for improved resolution and functionalization</i> <i>Olivier Haeberlé</i>
09:45 – 10:20	<i>Advancements in large scale optical tomography</i> <i>Jeroen Kalkman</i>
10:30 – 11:00	 <b>Break</b>
11:00 – 11:25	<i>Optical Tomography by Rotation in Acoustofluidic Platforms</i> <i>Mia Kvåle Løvmo</i>
11:30 – 11:55	<i>When Do Measurements Reveal How a Sample Rotates? The Challenge of Uniqueness in Rigid Motion Reconstruction</i> <i>Denise Schmutz</i>
12:00 – 12:25	<i>Talk of Christina Strohmenger</i>
12:30 – 14:00	 <b>Lunch Break</b>

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

18:00 – 19:30 **🍴Dinner**

19:30 – 20:30 **👥Meeting of the SFB Members**

## Friday, June 20

09:00 – 12:30 **↔Morning Session - Inverse Problems, Part 2**  
👤Chairing: Ronny Ramlau

09:00 – 09:35 *Talk of 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 – 12:20 *Talk of Ioannis Martikos*

12:30 – 14:00 **🍴Lunch Break**

14:00 – 18:00 **🔍Afternoon Session - Superresolution 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**

**Funded by:**



Der Wissenschaftsfonds.



**Partners:**

