



5th IMA Conference on Inverse Problems from Theory to Application

Programme

8th – 10th September 2026

Woburn House
Tavistock Square
London
WC1H 9HQ

Day 1- 8th September 2026

09:00 — 09:30	Registration with Tea & Coffee
09:30 — 09:35	Welcome, housekeeping, introduction – <i>Martin Benning</i>
	Session Chair: Martin Benning
09:35 — 10:20	Keynote 1 A preconditioned forward-backward algorithm for minimizing nonconvex composite functions: Application to radio-astronomical imaging <i>Audrey Repetti- Heriot-Watt University</i>
10:20 — 10:45	Adaptive And Efficient Residual Whiteness Principle Via ADMM And Proximal Mappings <i>Silvia Gazzola</i>
10:45 — 11:10	The SCD Semismooth* Newton Method for The Efficient Minimization of Tikhonov Functionals <i>Simon Hubmer</i>
11:10 — 11:40	Tea & Coffee Break
11:40 — 12:05	Weighted Total Variation Regularisation for Inverse Problems <i>Ole Løseth Elvetun</i>
12:05 — 12:30	An Arnoldi-Tikhonov Method for the Efficient Regularization of Linear Ill-Posed Problems <i>Ronny Ramlau</i>
12:30 — 13:05	Poster Presentation Introductions
13:05 — 14:35	Lunch and Posters
	Session Chair: Neill Campbell
14:35 — 15:20	Keynote 2 Tomography, PDEs, and Sustainable Learned Reconstruction <i>Samuli Siltanen- University of Helsinki</i>
15:20 — 15:50	Tea & Coffee Break
15:50 — 16:15	QVaR: A Quantum Variational Regularization Method for Linear Inverse Problems <i>Andreas Hauptmann</i>
16:15 — 16:40	Radiotherapy Planning as an Inverse Problem: Methods, Models, And Emerging Directions <i>Joana Dias</i>
16:40 — 17:05	Analytical Inversion of Modulo Radon Transform <i>Matthias Beckmann</i>
17:05 — 17:30	Bayesian Inversion for a Hamilton-Jacobi Equation with a Star-Shaped Prior <i>Viet Ha Hoang</i>

Day 2- 9th September 2026

	Session Chair: Marta Betcke
09:30 — 10:15	Keynote 3 Physics and AI for State Estimation <i>Roland Potthast- German Weather Service (DWD)</i>
10:15 — 10:40	Accelerating Diffusion Posterior Sampling in Large-Scale Bayesian Inverse Problems <i>Duc-Lam Duong</i>
10:40 — 11:05	Approximating Interpretable Posterior Correlation Structure in Inverse Problems <i>Teo Deveney</i>
11:05 — 11:35	Tea & Coffee Break
11:35 — 12:00	Generative AI For Almost-Nearly-Perfect Bayesian Computational Imaging <i>Marcelo Pereyra</i>
12:00 — 12:25	Beyond Image Priors: Gradient Step Denoisers on the Kernel Domain for Blind Inverse Problems <i>Andrea Sebastiani</i>
12:25 — 13:00	Poster Presentation Introductions
13:00 — 14:30	Lunch And Posters
	Session Chair: Marcelo Pereyra
14:30 — 15:15	Keynote 4 Towards Foundation Models in Computational Imaging <i>Julian Tachella- French National Centre for Scientific Research (CNRS)</i>
15:15 — 15:45	Tea & Coffee Break
15:45 — 16:10	Structured Importance-Weighted Inference for Uncertainty Quantification in High-Dimensional Deformable Image Registration <i>Ivor Simpson</i>
16:10 — 16:35	Neural Network-Based Motion-Aware Reconstruction of Dynamic MRI Data <i>Matthias Höfler</i>
16:35 — 17:00	Learned Regularisation and Uncertainty Quantification for Image Deconvolution in Fluorescence Microscopy <i>Sofia Agostoni</i>
17:00 — 17:25	Solving Inverse Problems with Flow-Based Models Via Model Predictive Control <i>Alexander Denker</i>
18:30	Conference Dinner

Day 3- 10th September 2026

	Session Chair: Margaret Duff
09:30 — 10:15	Keynote 5 Model-Based Geometric Deep Learning for Nonlinear Inverse Problems: Integrating Forward Models and Mesh-Based Regularization <i>Serena Morigi- University of Bologna, Italy</i>
10:15 — 10:40	Two-Dimensional Strain Field Imaging by Anisotropic Electrical Impedance Tomography <i>Mikko Räsänen</i>
10:40 — 11:05	Recovering Dipoles in EEG Using Weighted Group LASSO <i>Bjørn Fredrik Nielsen</i>
11:05 — 11:35	Tea & Coffee Break
11:35 — 12:00	Hidden Heat-Sources Estimation with a Deep Kalman Filter <i>Fabio Marcuzzi</i>
12:00 — 12:25	A Self-Supervised Approach for Quantitative Lifetime Estimation in Fluorescence Microscopy <i>Gabriele Scrivanti</i>
12:25 — 13:00	Poster Presentation Introductions
13:00 — 14:30	Lunch and Posters
	Session Chair: TBC
14:30 — 14:55	Accessibility And Usability of Model-Based Iterative Reconstruction Algorithms At STFC <i>Margaret Duff</i>
14:55 — 15:20	Safeguarded Iterative Reconstructions for Nuclear Fuel Safeguard Inspections <i>Tommi Heikkilä</i>
15:30 — 16:00	Tea & Coffee Break
16:00 — 16:25	Bi-Level Regularized Inversion with Application to Data-Driven Pdes <i>Tram Nguyen</i>
16:25 — 16:50	Data-Driven Projection-Based Regularisation for Galaxy Classification <i>Manuel Canizares</i>
16:50 — 17:00	Conference Close

Posters Presented for Day 1- 8th September 2026	
Sayana K. Jacob	Regularization Methods in the Context of Pseudo-Differential Operators
Matheus Loures	A Fast Boundary Method with Uncertainty Quantification: Method of Fundamental Solutions
Pietro Maurino	Iterated Graph Laplacian for Image Restoration Problems
Letizia Protopapa	Fitbenchmarking: Comparing Minimizers for Inverse Problems
Sebastian Eberle	Uncertainty Quantification for Phase Retrieval with Applications to Near-Field Holography
Yıldız Bozkurt	Layer Adapted Time of Flight Calculation using Interpolation for Medical Ultrasound Imaging
Andreas Chatziafratis	Analytical Inversion Mechanisms for Evolution PDE Via the Fokas Unified Transform Method
Chaima Abid	An Alternating Approach to Reconstruct PROMPT GAMMA Distribution and Hadron Velocity from Time-Of-Flight Measurements
Teresa Klatzer	Latent Sliced Wasserstein Flows for Scientific Inverse Problems
Bryce Shirley	Parallel And High Order Algorithms for Thick Sample Ptychography
Robert Johnson	Mathematical Algorithms for Ptychography Imaging

Posters Presented for Day 2- 9th September 2026	
Emma Erkocevic	Data-Driven Katsevich Filtered Backprojection
Alexandra Valavanis	Learning Regularisation Parameters Via Fenchel-Young Minimisation
Daniel Burrows	Motion-Enabled Tomography Via Gaussian Mixture Models
Stepan Bogdanov	Machine-Learning-Assisted Inverse Reconstruction of Micro- and Nano-plastics Using Structured-Light Topological Dynamics
Jehan Alswaihli	A Neural Field Theory Framework for EEG Inversion: Connecting Dynamics with Data
Christian Daniele	Noise And Task-Adaptive Deep Equilibrium Mirror-Descent for Poisson Image Reconstruction
Thomas Cheetham	Bayesian Inverse Periodic Navier-Stokes Problems: Applications To 4D Flow MRI
Riccardo Barbano	Solving Inverse Problems with Flow-Based Models Via Model Predictive Control
Xialu Liu	Sparse Factor Models for High Dimensional Time Series
Patrick Fahy	Optimisation-Aware Learned Regularisers for Imaging Inverse Problems
Luca Trautmann	Inferring Forward Operator Distributions in Linear Blind Inverse Problems Via Diffusion Priors
Jose Rodrigo Rojo Garcia	Bayesian Optimal Experimental Design with Wasserstein Information Criteria
Nicolas Goeman	A Hierarchical Likelihood Model for Non-Linear Inverse Problems Under Additive and Multiplicative Noises
Maren Casfor	Model Error Propagation in Bayesian Inversion

Posters Presented for Day 3- 10th September 2026	
Oscar Humphreys	Gaussian Processes for Probabilistic Seismic Wavefield Simulation
Karoliina Puronhaara	Utilising A Learned Forward Operator in the Inverse Problem of Photoacoustic Tomography
Lena Dunst	Large-Scale Model-Based 3D Image Reconstruction for Raster-Scan Optoacoustic Mesoscopy
Claire Namuroy	Bayesian Inversion and Uncertainty Quantification of RANS Turbulence Models in Flow MRI
Jarjish Rahaman	Spatial And Temporal Modulation in Time-Domain Diffuse Optical Tomography
Santeri Kaupinmäki	Sparse Reconstructions of Sound Speed and Absorption Using Phase-Insensitive Sensors in Ultrasound Tomography
Ivan Hasenohr	Online Parameter Reconstruction for Bilinear Control Systems with Applications To MRI
Anssi Manninen	Towards Robust Experimental Reconstruction Methods for Quantitative Photoacoustic Tomography Via Learned Iterative Methods
Keigo Oyama	Bayesian Model Selection for Detectability Limits Between Sphere and Core-Shell Models Using Synthetic SAXS Data
Davit Gyulamiryan	Application of Diffuse Domain Method to Inverse Navier-Stokes Problem for Flow-MRI Reconstruction
Nazanin Forghaniallahabadi	Regularised Recovery of Latent Market Regimes in Cryptocurrency Returns: An Inverse-Problem Approach
Clara Hawkins	Multi-Modality Imaging for Ptychography and X-Ray Fluorescence
Maciej Kaczorek	Sound Reconstruction from Neural Activity Patterns
Azhir Mahmood	A Spectral Approach to Adversarial Regularisation for Inverse Problems