

Workshop 4 on  
“Statistical estimation and deep learning in UQ for PDEs”

May 30 - June 3, 2022

organized by

Francis Bach (INRIA, Rocquencourt), Clemens Heitzinger (TU Vienna), Johannes  
Schmidt-Hieber (U of Twente), Sara van de Geer (ETH Zürich)

of the Thematic Programme on

“Computational Uncertainty Quantification: Mathematical Foundations, Methodology & Data”,  
May 2 - June 24, 2022

- **Monday, May 30th, 2022**

09:30 – 10:00 **Registration and Welcome**

10:00 – 10:45 **Remi Gribonval (INRIA, Rocquencourt)**

*Rapture of the deep : highs and lows of sparsity in a world of depths*

10:45 – 11:15 **Coffee Break**

11:15 – 12:00 **Richard Nickl (U Cambridge)**

*Bayesian non-linear inverse problems: Progress and Challenges*

12:00 – 14:00 **Lunch Break**

14:00 – 14:45 **Po-Ling Loh (U Cambridge)**

*Robust W-GAN-Based Estimation Under Wasserstein Contamination -online*

14:45 – 15:15 **Coffee Break**

15:15 – 16:00 **Claire Boyer (Sorbonne U, Paris)**

*Is interpolation benign for random forest regression? - online*

16:30 – **Apero at ESI**

- **Tuesday, May 31st, 2022**

09:15 – 10:00 **Helmut Bölcskei (ETH Zürich)**

*Metric entropy limits on recurrent neural network learning of linear dynamical systems*

10:00 – 10:45 **Andrew Barron (Yale U, New Haven)**

*Evolving posterior parameters for fitting mixture models and neural nets*

10:45 – 11:15 **Coffee Break**

11:15 – 12:00 **Pierre Alquier (RIKEN AIP)**

*Robust estimation via minimum distance estimation - online*

12:00 – 14:00 **Lunch Break**

14:00 – 14:45 **Michael Kohler (TU Darmstadt)**

*Estimation of multivariate regression functions by overparametrized deep neural networks - online*

14:45 – 15:15 **Coffee Break**

15:15 – 16:00 **Joost Opschoor (ETH Zürich)**

*Constructive Deep ReLU Neural Network Approximation*

18:30 – 22:00 **Workshop Dinner at Heuriger Schübel-Auer**

- **Wednesday, June 1st, 2022**

09:30 – 10:00 **Petr Zamolodtchikov (U of Twente)**

*Local convergence rates of the least-squares estimator with applications to transfer learning*

10:00 – 10:45 **Sven Wang (MIT, Cambridge)**

*Minimax density estimation via measure transport*

10:45 – 11:15 **Coffee Break**

11:15 – 12:00 **Alexis Derumigny (TU Delft)**

*Robust-to-outliers square-root Lasso, simultaneous inference with a MOM approach - online*

12:00 – **Free Afternoon, Excursion**

- **Thursday, June 2nd, 2022**

09:30 – 10:00 **Annika Lang (CUT, Gothenburg)**

*Short-term traffic prediction using physics-aware neural networks - online*

10:00 – 10:45 **Geoffrey Chinot (ETH Zürich)**

*Adaboost and robust 1-bit compressed sensing*

10:45 – 11:15 **Coffee Break**

11:15 – 12:00 **Carola-Bibiane Schönlieb (U Cambridge)**

*Score based diffusion models for conditional generation*

12:00 – 14:00 **Lunch Break**

14:00 – 14:45 **Fan Yang (ETH Zürich)**

*Generalization performance of interpolating models in high dimensions*

14:45 – 15:15 **Coffee Break**

15:15 – 16:00 **Sophie Langer (TU Darmstadt)**

*Image classification: A (new) statistical viewpoint*

16:00 – 16:45 **Hrushikesh Mhaskar (Claremont Graduate U)**

*A direct method for approximation on unknown manifolds - online*

- **Friday, June 3rd, 2022**

09:15 – 10:00 **Clemens Heitzinger (TU Wien)**

*Convergence in distributional reinforcement learning and applications*

10:00 – 10:45 **Taiji Suzuki (U Tokyo)**

*Adaptivity of deep learning: Efficiency of function estimation and optimization guarantee from nonconvexity view-point*

10:45 – 11:15 **Coffee Break**

11:15 – 12:00 **Tiangang Cui (Monash U, Melbourne)**

*DIRT: a tensorised inverse Rosenblatt transport method*

12:00 – 12:30 **Concluding Remarks**

**The event takes place at the Erwin Schrödinger Institute - Boltzmann lecture hall! On-site participation is possible on request. Online participation is possible via zoom. Zoom coordinates are available on request and after registration (secr@esi.ac.at) until May 27, 2022.**