

Workshop 2 on**“Approximation of high-dimensional parametric PDEs in forward UQ”****May 9 - 13, 2022****organized by****Albert Cohen (Sorbonne U, Paris), Fabio Nobile (EPFL Lausanne), Catherine Powell (U of Manchester), Christoph Schwab (ETH Zürich), Lorenzo Tamellini****of the Thematic Programme on****“Computational Uncertainty Quantification: Mathematical Foundations, Methodology & Data”(May 2 - June 24, 2022)****• Monday, May 9th, 2022****09:30 – 10:30 Registration & Coffee & Free Time for Discussion****10:30 – 11:20 Virginie Ehrlacher (ENPC, Paris)***Influence of Monte-Carlo sampling on greedy algorithms for variance reduction***11:20 – 12:10 André Uschmajew (MPI Leipzig)***Dynamical low-rank approximation for parabolic problems***12:10 – 13:50 Lunch Break****13:50 – 14:40 Christian Rieger (Philipps U, Marburg)***Kernel based reconstruction for Bayesian inverse problems***14:40 – 15:10 Coffee Break****15:10 – 16:00 Ionut-Gabriel Farcas (U of Texas, Austin)***A general framework for quantifying uncertainty at scale and its application to fusion research - online***16:00 – 16:50 Clayton Webster (U of Texas, Austin)***Reconstructing high-dimensional Hilbert-valued functions via compressed sensing - online***• Tuesday, May 10th, 2022****09:30 – 10:30 Coffee and Free Time for Discussion****10:30 – 11:20 Eva Vidlickova (EPFL Lausanne)***Variational Formulation and Stability Properties of a Projector-Splitting Scheme for Dynamical Low Rank Approximation of Random Parabolic Equations***11:20 – 12:10 Gianluigi Rozza (SISSA, Trieste)***Stabilized Reduced Order Methods for Transport Control Problems with Random Inputs***12:10 – 13:50 Lunch Break****13:50 – 14:40 Gitta Kutyniok (LMU Munich)***The Impact of Artificial Intelligence on Parametric Partial Differential Equations - online***14:40 – 15:10 Coffee Break**

15:10 – 16:00 **Amir Sagiv (Columbia University, New York)**

A Measure Perspective on Uncertainty Propagation - online

16:00 – 16:50 **Nicholas Dexter (Simon Fraser U, Vancouver)**

Efficient algorithms for computing near-best polynomial approximations to high-dimensional, Hilbert-valued functions from limited samples - online

- **Wednesday, May 11th, 2022**

09:40 – 10:30 **Alex Bespalov (U. of Birmingham)**

Multilevel and goal-oriented adaptivity for stochastic Galerkin FEM

10:30 – 11:00 **Coffee Break**

11:00 – 12:00 **Group Discussion Session**

12:00 – 14:00 **Lunch Break**

14:00 – 14:50 **Alireza Doostan (U of Colorado, Boulder)**

GenMod: A generative modeling approach for spectral representation of PDEs with random inputs - online

14:50 – 15:20 **Coffee Break**

15:20 – 16:10 **Oliver Ernst (TU Chemnitz)**

Wasserstein Sensitivity of Risk and Uncertainty Propagation

19:00 – 22:00 **Conference Dinner at Glacis Beisl**

- **Thursday, May 12th, 2022**

09:30 – 10:30 **Coffee and Free Time for Discussion**

10:30 – 11:20 **Markus Bachmayr (U Mainz)**

Multilevel representations of random fields

11:20 – 12:10 **Helmut Harbrecht (University of Basel)**

Efficient discretization techniques of shape uncertainty problems

12:10 – 14:10 **Lunch Break**

14:10 – 15:00 **Holger Rauhut (RWTH Aachen)**

The implicit bias of gradient descent for learning deep neural networks - online

15:00 – 15:30 **Coffee Break**

15:30 – 16:00 **Yoshihito Kazashi (EPFL Lausanne)**

Sub-optimality of Gauss–Hermite quadrature and optimality of trapezoidal rule for functions with finite smoothness

16:00 – 16:50 **Davide Pradovera (U Vienna)**

Surrogate modeling of parametric frequency response problems via locally adaptive sparse grids

- **Friday, May 13th, 2022**

09:30 – 10:20 **Olga Mula Hernandez (Dauphine U, Paris)**

Bayesian Inverse Problems with ABC-ROM sampling. Application to epidemiological forecasting - online

10:20 – 10:50 **Coffee Break**

10:50 – 11:40 **Matthieu Dolbeault (Sorbonne U, Paris)**

A sharp upper bound for sampling numbers in L_2

11:40 – 12:30 **Lorenzo Tamellini (CNR-IMATI, Pavia)**

Multi-Index Stochastic Collocation for forward UQ of single- and multi-disciplinary systems

12:30 – 14:30 **Lunch Break/Finish**

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 6, 2022.