Program

Mar 2 – 4, 2026

Data-driven methods for partial differential equations

Karlsruhe Institute of Technology

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Mon, March 2

10:00 AM

1:00 PM

Registration: Registration
Session |
Location: Math Building (20.30), Karlsruhe Institute of Technology, Room 1.059, Englerstr. 2, 76131 Karlsruhe

1:00 PM

Opening: Opening
Session | **Location:** Math building (20.30), Room 1.067, Englerstr. 2, 76131 Karlsruhe | **Convener:** Benjamin Unger

1:15 PM

Description

Welcome address and introduction

1:15 PM

Invited talks 1: AI for simulation (Speaker: Mishra, Dietrich)
Session |
Location: Math Building (20.30), Karlsruhe Institute of Technology, Room 1.067, Englerstr. 2, 76131 Karlsruhe |
Convener: Martin Frank

1:15 – 2:00 PM **AI for Efficient Simulations of PDEs**

Speaker
Siddhartha Mishra

2:00 – 2:45 PM **Solving time-dependent PDEs with random feature models**

Speaker
Felix Dietrich

2:45 PM

2:45 PM

Coffee break
Break |
Location: Math Building (20.30), Karlsruhe Institute of Technology, Room 1.058, Englerstr. 2, 76131 Karlsruhe

3:15 PM

3:15 PM

Invited talks 2: Learning dynamical systems (Speaker: Gottschalk, Boyer)
Session |
Location: Math Building (20.30), Karlsruhe Institute of Technology, Room 1.067, Englerstr. 2, 76131 Karlsruhe |
Convener: Mathias Trabs

3:15 – 4:00 PM **When do World Models Successfully Learn Dynamic Systems?**

Speaker
Hanno Gottschalk

4:00 – 4:45 PM **A statistical tour of physics-informed learning**

Speaker
Claire Boyer

4:45 PM

5:15 PM

Panel Discussion
Session | **Location:** Triangel, Kaiserstraße 93, 76133 Karlsruhe | **Convener:** Benjamin Unger

6:15 PM

6:15 PM

Poster blitz, poster session, and welcome reception
Session | **Location:** Triangel, Kaiserstraße 93, 76133 Karlsruhe

6:15 – 6:18 PM

Neural semi-Lagrangian method for high-dimensional advection-diffusion problems

Speaker
Laurent Navoret

6:18 – 6:21 PM

Prediction error certification for PINNs: Theory, computation and application

Speaker
Birgit Hillebrecht

6:21 – 6:24 PM

Posterior contraction under misspecification and heteroskedasticity in non-linear inverse problems

Speaker
Maximilian Siebel

6:24 – 6:27 PM **Geometric Optimization in Scientific Machine Learning**

Speaker
Johannes Müller

6:27 – 6:30 PM **Hyperbolic Traffic Models with Uncertain Accident Dynamics**

Speaker
Thomas Schillinger

6:30 – 6:33 PM **Exploratory computation of statistical Navier–Stokes solutions**

Speaker
Stephan Simonis

9:15 PM

Tue, March 3

8:30 AM

Invited talks 3: Model order reduction (Speaker: Glas, Peherstorfer)
Session |
Location: Math Building (20.30), Karlsruhe Institute of Technology, Room 1.067, Englerstr. 2, 76131 Karlsruhe |
Convener: Benjamin Unger

8:30 – 9:15 AM
Structure-preserving model reduction: From the formulation on manifolds to data-driven realizations

Speaker
Silke Glas

9:15 – 10:00 AM
Data-driven reduced modeling of chaotic, turbulent, and stochastic systems via population dynamics

Speaker
Benjamin Peherstorfer

10:00 AM

10:00 AM

Coffee break
Break |
Location: Math Building (20.30), Karlsruhe Institute of Technology, Room 1.058, Englerstr. 2, 76131 Karlsruhe

10:30 AM

10:30 AM

Invited talks 4
Session |
Location: Math Building (20.30), Karlsruhe Institute of Technology, Room 1.067, Englerstr. 2, 76131 Karlsruhe |
Convener: Sebastian Krumscheid

10:30 – 11:15 AM
Finite-precision arithmetic in deep learning for scientific computing

Speaker
Philipp Petersen

11:15 AM – 12:00 PM
Optimal Sensor Placement for Linear Inverse Problems via Measure Optimisation

Speaker
Andrew Duncan

12:00 PM

12:00 PM

Lunch break
Break | **Location:** Karlsruhe Institute of Technology

2:00 PM

2:00 PM

Invited talks 5
Session |
Location: Math Building (20.30), Karlsruhe Institute of Technology, Room 1.067, Englerstr. 2, 76131 Karlsruhe |
Convener: Martin Frank

2:00 – 2:45 PM
Ensemble Kalman Methods for Optimization: Subspace Control, Subsampling, and Applications in Machine Learning and Optimal Control

Speaker
Claudia Schillings

2:45 – 3:30 PM

Data assimilation with dissipative nonlinear dynamical systems: Optimal Gaussian asymptotics for the posterior measure

Speaker
Dimitri Konen

3:30 PM

3:30 PM

Coffee break
Break | **Location:** Karlsruhe Institute of Technology

4:00 PM

4:00 PM

Invited talks 6
Session |
Location: Math Building (20.30), Karlsruhe Institute of Technology, Room 1.067, Englerstr. 2, 76131 Karlsruhe |
Convener: Mathias Trabs

4:00 – 4:45 PM   **Data-Driven Methods to Solve Maxwell's equations**

Speaker
Carsten Rockstuhl

4:45 – 5:30 PM   **Statistical Guarantees for Denoising Reflected Diffusion Models**

Speaker
Claudia Strauch

5:30 PM

7:00 PM

Conference Dinner
Break | **Location:** Restaurant: Wilma Wunder, Karl-Friedrich-Straße 9, 76133 Karlsruhe

9:30 PM

Wed, March 4

9:45 AM

Invited talks 7

Session | **Location:** Math Building (20.30), Karlsruhe Institute of Technology, Room 1.067 | **Convener:** Mathias Trabs

10:30 AM

9:45 – 10:30 AM

On gradient stability in nonlinear PDE models and inference in interacting particle systems

Speaker
Aurélien Castre

10:30 AM

Closing

Session | **Location:** Math Building (20.30), Karlsruhe Institute of Technology, Room 1.067

10:45 AM