

Friday, 12 July 2024 at 14:15

PTB, Anna-von-Helmholtz-Bau, Marchstr./ Fraunhoferstr., Lecture Hall 1st floor

*Tea & Cookies
starting at 13:00*

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Martin Burger*(DESY, Helmholtz Imaging)***Particle Methods in Machine Learning and Inverse Problems**

The use of methods resembling (interacting) particle systems has gained a lot of interest for different tasks in machine learning, inverse problems, and related fields. Popular examples are Langevin-type sampling methods that can be constructed for efficient posterior sampling in Bayesian inverse problems and score-based diffusion models, or consensus type methods that are found in optimization, sampling as well as modern transformer architectures.

In this talk, Burger will give an overview of different approaches of recent interest and relate their mathematical analysis to well-known and some novel concepts in statistical mechanics, PDEs, and stochastic processes. The content of the talk is based on joint works with Lorenz Kuger, Lukas Weigand, Franca Hoffmann, Matthias Erbar, Daniel Matthes, André Schlichting and Tim Roith.

Martin Burger is a Lead Scientist at DESY and full professor at Universität Hamburg. He obtained his PhD in 2000 at JKU Linz, and moved to Hamburg in 2023, following postdoctoral positions in Austria and at UCLA, as well as full professor positions at Universität Münster and FAU Erlangen-Nürnberg. He received various recognitions for his work in applied mathematics and imaging science, such as being an invited speaker at ECM 2021, ICM 2022, ICIAM 2023.

**BMS Certificate Ceremony
& MATH+ Summer Party**
starting at 16:00!

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