**Weierstrass Institute for Applied Analysis and Stochastics**
**Leibniz Institute in Forschungsverbund Berlin e. V.**

The Weierstrass Institute for Applied Analysis and Stochastics (WIAS) is an institute of the Forschungsverbund Berlin e.V. (FVB). The FVB comprises seven non-university research institutes in Berlin which are funded by the federal and state governments. The research institutes belong to the Leibniz Association.

WIAS invites applications for a

# Postdoc Position (f/m/d)

**(Ref. 23/11)**

**at the intersection of the areas machine learning / mathematical optimization / optimal control with a focus on robustness under distribution shift** in Berlin, Germany.

The position is associated with the third-party funded research project lead by Dr. Jia-Jie Zhu (WIAS Berlin) and Prof. Michael Hintermüller (WIAS/ Humboldt-Universität zu Berlin)

**Data-driven Robust Model Predictive Control under Distribution Shift**

within the Berlin Mathematics Research Center MATH+ lead by Dr. Jia-Jie Zhu (WIAS Berlin) and Prof. Michael Hintermüller (WIAS/ Humboldt-Universität zu Berlin). The initial funding will run for two years, started January 2022. The applicants should have completed their Ph.D. degrees by the starting date of the project.

Motivated by numerous partial differential equations related practical applications, a pressing challenge for data-driven optimization and control systems is the ubiquitous distribution shift, which implies higher demand for the robustness of the machine learning system design. The project, funded by the Excellence Cluster MATH+: The Berlin Mathematics Research Center, aims to address the issue of data-driven robust control and optimization of dynamical systems under data distribution shifts, using principled tools from applied mathematics and statistical machine learning as well as reinforcement learning. We invite postdoctoral candidates whose scholar profiles are mainly theoretical and exhibit proven excellence in research. We specifically prefer two types of mathematical research experiences:

(1) either in principled statistical machine learning/reinforcement learning theory (related to dynamical systems, time series, Markov decision process (MDP), control theory). Those qualifications are demonstrated, among others, by high-quality publications in credible venues such as NeurIPS/ICLR/AISTATS/ICML/CoLT/JMLR/L4DC/IEEE-CDC.

(2) and/or in applied mathematics, in optimization, numerical analysis, optimal control, dynamical systems (PDEs and S(P)DEs), data-driven modeling of dynamics, model predictive control (MPC). Those qualifications are demonstrated, among others by relevant publications in credible venues such as SIAM OPT/CON/COAP/COCV/MathProg.

**What we offer:**

- Close mentorship: the postdoc candidate will receive responsible and careful mentorship. We emphasize fostering a healthy mentor-mentee relationship.
- WIAS Berlin is a premier research institution known for its strength in optimization, optimal control, dynamical systems, and applied mathematics in general. It has hosted flagship conferences in mathematical optimization such as ICCOPT 2019.
- A certified (Audit berufundfamilie) family-friendly work environment.
- Berlin is one of the most culture-rich and diverse international cities in the world. It offers endless opportunities to enjoy life outside work, while being very affordable compared to other major cities. Neither the job nor living in Berlin requires German language (although WIAS offers free German courses). We highly welcome international applications.

Scientifically, Berlin offers a rich landscape with numerous opportunities for research, as well as job prospects in academia and industry.

Please direct scientific queries to Dr. J.-J. Zhu (Zhu@wias-berlin.de).

The envisioned starting date is July 1, 2023 and the appointment is limited until December 31, 2023. The work schedule is 39 hours per week, and the salary is according to the German TVoeD Bund scale.

The Weierstraß Institute is an equal opportunity employer. We explicitly encourage female researchers to apply for the offered position. Among equally qualified applicants, disabled candidates will be given preference.

Please upload complete application documents including a cover letter, curriculum vitae (CV), relevant certificates, and the Ph.D. thesis (as draft if not finalized) as soon as possible via our online job-application facility using the button "Apply online".

**The advertisement is open with immediate effect and will remain open until the position will be filled.**

**We are looking forward to your application!**