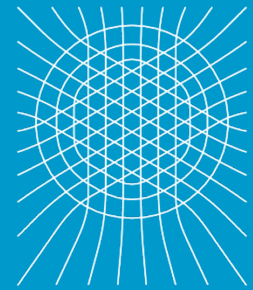**Are you looking for a new professional challenge? Then this is the place to be! Become part of our international team.**

October 8, 2020

The Zuse Institute Berlin (ZIB) is a non-university research institute under public law of the state of Berlin. Within the research group "Computational Systems Biology" and the department "Modeling and Simulation of Complex Processes", we offer a

Research Position (m/f/d)
Reference Code: WA 62/20
Pay Grade: E13 TV-L Berlin (75%)

for the excellence cluster MATH+ project "Concentration Effects and Collective Variables in Agent-Based Systems" as a fixed-term contract from February 1st, 2021 for 36 months.

Background

Agent-based models (ABMs) are often high-dimensional and complex, making simulations costly and formal analysis hard. Low-dimensional model reduction is hence of great interest. The systems often showcase favorable properties, such that the complex overall behavior of the individual agents can be approximated by the stochastic evolution of a small number of macroscopic collective variables describing the effective dynamics of the system. Moreover, if the number of agents is large, one can observe a concentration of measure in the sense that the collective variables follow an almost deterministic and smooth evolution.

Job description

The goals of the project are to

- mathematically formalize and characterize the above model reduction
- develop a computational machinery for finding collective variables and their effective evolution for complex systems
- understand collective social behavior on an abstract and applied level
- publish the results in peer-reviewed journals and present them at international conferences.

You will work in an interdisciplinary environment in cooperation with scientists from the Freie Universiät Berlin and the Potsdam Institute for Climate Impact Research (PIK). A combination of the project work with a doctorate at the Freie Universität Berlin is intended.

Your profile

- Excellent Master's degree (or equivalent) in mathematics or related disciplines
- Advanced knowledge in one or more of the following fields: probability theory, stochastic processes, numerical mathematics
- Advanced programming skills, ideally in Matlab, Python, Julia, C, C++, or similar languages
- Theoretical and practical experience in the analysis of multiscale systems or in agent-based modeling is of advantage
- Good command of written and spoken English

- Creativity, high commitment and independence in dealing with research questions and problems.

We offer a friendly working atmosphere with flexible work and meeting times, excellent equipment and a challenging professional environment.

As well as

- a varied, future-oriented and responsible field of activity
- comprehensive training in a competent and cooperative team
- an additional pension scheme (VBL)
- 30 days annual leave, flexible working hours (flexitime)
- payment in accordance with TV-L (Collective Agreement for the Public Service of the Federal States), taking into account the relevant professional experience and annual special payment
- the use of canteens and sports programs of the Freie Universität Berlin at reduced rates.

Female applicants are highly encouraged to apply. Since women are underrepresented in information technology, the ZIB is trying to increase the proportion of women in this research area.

Applicants with disabilities will be given preference if equally qualified.

Please send your application, quoting the reference code **WA 62/20**, including cover letter containing a statement of your research interests, CV with a list of publications, academic transcripts, and contact details of two references, by **December 1st, 2020** (date of receipt) to

Zuse Institute Berlin (ZIB)
- Administration -
Takustr. 7
14195 Berlin

or by email in pdf format to: jobs@zib.de.

Our private policy statement regarding application data is available at www.zib.de/impressum.

For further information about the position, please refer to our website www.zib.de or contact Dr. Stefanie Winkelmann (winkelmann@zib.de).

For further job offers please visit our website at www.zib.de/jobsads.