22.11.18

The Zuse Institute Berlin (ZIB) is a non-university research institute under public law of the state of Berlin. The division "Mathematics for Life and Materials Sciences" is offering – subject to the approval of funds – a

<div align="center">

research position – PhD (f/m)
Reference code: WA58/18
Pay grade E 13 TV-L Berlin (75 %)

</div>

in the department *Numerical Mathematics*. The contract will start January 1st, 2019 or at the earliest possible date and will be a fixed-term contract until December 31st, 2020 with the option to be extended.

Background

The position is part of a research project of the Cluster of Excellence MATH+ at ZIB.

The main goal of this project is to learn reduced models for large-scale mobility agent-based models (ABMs). Mobility constitutes a complex socio-technical system that seems to be facing a transition. Questions to be addressed include relevant time horizons for a potential transition from conventional cars to electric vehicles and conditions under which market tipping can set in. The research will be carried out in close collaboration with the Global Climate Forum (GCF) and Freie Universität Berlin and will focus on the Mobility Transition Model (MoTMo), developed by GCF for interactive digital decision support ("decision theatre workshops") with stakeholders from research, economy, politics, and civil society. The successful candidate shall be included in research groups both at ZIB and at GCF.

Tasks

The tasks related to the position include:

- extension of MoTMo from algorithmic to mathematical model

- development, analysis, and optimization of model reduction techniques tailored to large-scale ABM data

- prototypical implementation in Python or Matlab

- validation of reduced models and comparison with available statistical data

- supporting decision theater activities with the results obtained

- publication of results in peer-reviewed journals

We expect creativity and a high degree of commitment in solving problems. We offer a friendly working atmosphere, excellent equipment, and a challenging professional environment. In

addition, Berlin offers rich mathematic surrounding, which is particularly interesting due to the excellence platform ECMath with its research center Matheon and the Berlin School of Mathematics for junior scientists. We offer scientists in all career stages opportunities for further qualification and support and expect research on top level with international visibility. We will support the participation at international and national conferences. Through the cooperation with the non-profit association GCF, this project also offers the opportunity to work in an inter- and transdisciplinary context.

Requirements

- university master degree in mathematics, computer science, or related disciplines
- good programming skills (preferably Python and Matlab)
- experience in some or all of the following areas is essential: dynamical systems (modeling, ordinary differential equations, stochastic processes, model reduction), agent-based models (implementation, calibration, visualization)
- applicants are expected to be highly motivated, self-reliant, and open-minded to interdisciplinary collaboration
- good command of written and spoken English is a must.

The candidature of women is encouraged. Since women are underrepresented in information technology, ZIB is trying to increase the proportion of women in this research area.

Persons with disabilities will be given preference, when equally qualified.

Please send your application, quoting the reference code **WA58/18**, including CV in tabular form and all relevant documents by **Dec. 13th, 2018** (date of receipt) to

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

or electronically as pdf-form to: jobs@zib.de.

You can find our privacy policy on our website at www.zib.de/impressum.

For further information about the position please contact Prof. Dr. Christof Schütte (schuette@zib.de) or Dr. Stefan Klus (stefan.klus@fu-berlin.de).

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