The DFG-funded **Collaborative Research Center SFB 1294 "Data Assimilation – The Seamless Integration of Data and Models"**, hosted at the University of Potsdam jointly with its partner Institutions HU Berlin, TU Berlin, WIAS Berlin and GFZ Potsdam, invites applications for a **doctoral researcher position** starting as soon as possible.

Our vision. The assimilation of time-dependent data sets into complex evolution models leads to unique mathematical and computational challenges. These challenges provide the central theme of the SFB 1294. Data assimilation constitutes a rapidly expanding field at the confluence of several established research areas in mathematics, statistics and machine learning, as well as applications from the natural sciences and other disciplines. Our vision is to establish a rigorous mathematical underpinning of data assimilation, to develop principled computational methodologies, and to apply these methodologies to newly emerging application fields in the geosciences, neuro-sciences, pharmacology and biophysics.

The SFB 1294 provides an excellent research infrastructure including a large interdisciplinary network of researchers and its own graduate school, as well as funding opportunities for conference visits, summer schools, and hosting international experts.

The position. We seek applicants for a doctoral position (TVL - E13 75%) within **Project B02a: "Inferring the dynamics underlying protrusion-driven cell motility"**
(PIs: Carsten Beta/Matthias Holschneider)

The locomotion of adherent eukaryotic cells is at the heart of many essential biological processes. It is typically described by reaction-diffusion models in combination with a dynamic phase field. In this project, we will establish a systematic, data-based framework for the comparison and improvement of this class of motility models. This will include experimental data acquisition as well as the development of a cell contour analysis algorithm, along with data assimilation techniques to integrate our experimental recordings into reaction-diffusion-type motility models.

We are looking for a highly motivated, outstanding PhD candidate interested in working at the interface of biological physics and mathematics. We are seeking applicants from physics, preferentially with a background in biological physics. Experience in optical microscopy and handling of cell cultures is advantageous but not required. A background in theoretical modeling and the ability to communicate and closely collaborate with mathematicians is essential to benefit from and successfully integrate into the interdisciplinary environment of this CRC.

The candidate will work at the Institute of Physics and Astronomy, University of Potsdam, in the biological physics group of Prof. Carsten Beta.

The salary is determined by the collective bargaining agreement for public employees in Germany (TV-L 13). All positions are temporary in accordance with Section 2 subsection 1 of the Academic Fixed-Term Contract Law (WissZeitVG). Under the laws of the federal state of Brandenburg, employees under this contract are permitted to dedicate at least 33% of their contract time for their scientific qualification. The SFB 1294 seeks to promote diversity in research, and encourages qualified applicants of any gender and from any background to apply.

Applications to the SFB should be submitted via https://www.geo-x.net/sfb-1294/ and should include (1) a statement of research interests and motivation, (2) a full CV, (3) the names, e-mail addresses and/or reference letters of at least two referees, (4) academic transcripts and (5) link to electronic copy of your Master/Diploma thesis (6) list of publications/talks/presentations in a single PDF file. Applications will be considered until the position has been filled. Please indicate clearly which of the projects/positions you are applying for (e.g. "A04") and state your motivation accordingly.

See the website www.sfb1294.de for further information or contact biophys@uni-potsdam.de.

References and further reading

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D Schindler, T Moldenhawer, M Stange, C Beta, M Holschneider, W Huisinga
PLoS Computational Biology, zur Veröffentlichung angenommen (https://arxiv.org/abs/2005.12678)

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E Moreno, S Flemming, F Font, M Holschneider, C Beta, S Alonso
Physica D: Nonlinear Phenomena 412, 132591 (2020).

[3] How cortical waves drive fission of motile cells
S Flemming, F Font, S Alonso, C Beta
Proceedings of the National Academy of Sciences 117 (12), 6330-6338 (2020).

[4] Modeling random crawling, membrane deformation and intracellular polarity of motile amoeboid cells
S Alonso, M Stange, C Beta
PloS one 13 (8), e0201977 (2018).