



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** available with a starting date of November 2021 and June 2022 the latest.

Our vision. The assimilation of time-dependent data sets into complex evolution models leads to unique mathematical and computational challenges. These challenges which 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, on the one hand and 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 net-work of researchers and its own graduate school, as well as funding opportunities for conference visits, summer schools, and hosting international experts etc.

The SFB 1294 seeks to promote diversity in research, and encourages qualified applicants of any gender and from any background to apply.

The position. We seek applicants for a doctoral position (TVL – E13 75%) within **Project A06: “Approximative Bayesian inference and model selection for stochastic differential equations”** (PIs: Opper, Reich, Spokoiny)

The project aims to develop novel Bayesian inference methods for dynamic point and diffusion processes upon combining machine learning techniques, such as random feature maps and deep neural networks, with data assimilation techniques, such as the ensemble Kalman and the feedback particle filter. The successful candidate will be expected to develop efficient algorithmic implementations as well as advance our theoretical understanding in terms of McKean-Vlasov mean-field equations and posterior consistency. The work will also be conducted in close collaboration with practitioners from the cognitive sciences and geosciences within SFB 1294, who require such advanced inference tools for connecting their models to available experimental and observational data sets.

We expect a candidate with a Master degree in Mathematics, Data Science, Computer Science or Physics. The candidate will work at the Institute of Mathematics at the University of Potsdam in the group of Sebastian Reich and will closely collaborate with the groups of the Co-PIs Vladimir Spokoiny (WIAS, Berlin) and Manfred Opper (TU Berlin).

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. "A06") and state your motivation accordingly.

See the website www.sfb1294.de for further information or contact Sebastian Reich (sebastian.reich@uni-potsdam.de).