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 postdoctoral researcher position.

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, neurosciences, 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 etc.

The position. We seek applicants for a postdoctoral position (TVL - E13) within Project B04: "Parametric and nonparametric modeling of spatiotemporal change patterns in seismicity using Hawkes processes" starting in June 2023 (PIs: Gert Zöller / Matthias Holschneider).

This project studies point process models of Hawkes type for simulating occurrences of earthquakes in space and time. Particular emphasis is put on applications and extensions of the model GP-ETAS, which has been developed in the first funding period of the CRC. GP-ETAS is a combination of the Epidemic Type Aftershock sequences (ETAS) model and Gauss process modeling within a fully Bayesian framework (for details see: Molkenthin *et al.* GP-ETAS: semiparametric Bayesian inference for the spatio-temporal epidemic type aftershock sequence model. *Stat Comput* **32**, 29 (2022). https://doi.org/10.1007/s11222-022-10085-3). The aim of this project is to extend the model towards seismicity patterns arising from non-stationary driving mechanisms, which is of particular interest for describing induced seismicity, e.g. in environments affected by man-made actions (geothermal systems, fracking, etc.). Furthermore, it is intended to design a testable probabilistic algorithm to routinely forecast earthquake rates in specific regions based on GP-ETAS.

The ideal candidate has a Ph.D. in mathematics, mathematical statistics, or geophysics. Applicants should have excellent knowledge of statistics, probability theory, and numerical methods. In addition, experience with scientific preferably in Python is required. The candidate must be able to communicate effectively in both written and spoken English. Workplace will be at the Institute of Mathematics at the University of Potsdam with apl. Prof. Gert Zöller and Prof. Matthias Holschneider. A close collaboration with PD Sebastian Hainzl (GFZ German Research Centre for Geosciences) exists and will be continued.

For more information about the CRC, please see our website: www.sfb1294.de. Please do not hesitate to contact us under SFB1294@uni-potsdam.de in case of any specific queries.