The Collaborative Research Center “Wave phenomena – analysis and numerics” (CRC 1173), is currently seeking to recruit, as soon as possible, limited to three years, a

**Doctoral Researcher (f/m/d)**

**Project B7 “Dynamics of electrical depolarization waves in the heart”**

The CRC has been funded by the German Research Foundation (DFG) since 2015. Its goal is to analytically understand, numerically simulate, and eventually manipulate wave propagation under realistic scenarios by intertwining analysis and numerics.

Project B7 “Dynamics of electrical depolarization waves in the heart” ([www.waves.kit.edu/B7](http://www.waves.kit.edu/B7)) aims at modeling, characterizing, and numerically approximating depolarization wave patterns in the human heart. Furthermore, we will construct and apply a reentrant reaction eikonal scheme for the simulation of chaotic fibrillatory waves, and evaluate its accuracy by comparison with simulations performed with the full model. Moreover, we will identify model parameters in a patient-specific manner and apply the developed methods in an optimal control problem to pave the way for the clinical adoption of painless overdrive pacing against atrial fibrillation.

We seek an ambitious doctoral researcher with a strong interest both in theoretical and practical aspects of cardiac electrophysiology. Your work will focus on numerical characterization of the reentrant reaction eikonal scheme for precise computation of activation times in the [openCARP electrophysiology simulator](http://opencarp.org) as well as on the identification of the spatial distribution of clinically relevant cardiac tissue parameters through physics-informed neural networks. You will have the opportunity to attend conferences, workshops, and summer schools. Engagement in teaching is encouraged. In close collaboration with the partners at KIT's Institute for Applied and Numerical Mathematics, you will drive interdisciplinary research at the interface between biomedical engineering and mathematics.

You are an open and ambitious team player happy to take responsibility and motivated to strive for creative, open, and sustainable solutions. We provide a cooperative and communication-oriented environment in the [Computational Cardiac Modeling group](http://www.ccm.kit.edu) at the Institute of Biomedical Engineering. The CRC is an inspiring, attractive, interdisciplinary, and internationally recognized scientific environment with access to excellent facilities of the KIT, a wide scope of advanced training options within our integrated research training group, and flexible working time models. Our CRC aims at the implementation of equal opportunities, it promotes diversity and supports persons with childcare or eldercare responsibilities as well as persons with disabilities. Funds for travel and guests are available through the CRC.

**The following qualifications are required** seeking your consideration for this position:

- Excellent Master’s or an equivalent degree in Electrical Engineering and Information Technology, Numerical Mathematics, Physics, Computer Science, or a related field
- We expect excellent writing and oral communication skills in English along with the ability to work independently within an international team.

Programming skills and experience with the modeling and simulation of cardiac electrophysiology or with physics-informed neural networks are a plus.

Applications should include a cover letter, a curriculum vitae, a statement of research interest, contact information for two referees, and copies of degree certificate(s).
We offer an attractive and modern workplace with access to excellent facilities of KIT, diverse and responsible tasks, a wide scope of advanced training options, supplementary pension with the VBL (Pension Authority for Employees in the Public Service Sector), flexible working time models, a job ticket (BW) allowance, and a cafeteria/canteen.

We prefer to balance the number of employees (f/m/d). Therefore, we kindly ask female applicants to apply for this job. If qualified, severely disabled persons will be preferred.

Applications should be submitted online to office@waves.kit.edu by August 15th, 2023. For further information, please contact PD Dr. Axel Loewe (axel.loewe@kit.edu) or Ms. Laurette Lauffer (Laurette.lauffer@kit.edu)

Further details can be found on our website: www.kit.edu

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