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 – 75 %)**

for the CRC 1173 doctoral thesis project “Numerical analysis of multiscale methods”

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.

Nowadays a lot of new materials are artificially constructed and tailored to exhibit astonishing physical properties. These metamaterials are characterized by fine structures of different material components. Within mathematical models, this leads to partial differential equations with a coexistence of multiple spatial scales. However, standard numerical methods need to resolve all fine scales and thus have a prohibitive computational effort. Numerical multiscale methods in turn decompose the solution into a macroscopic and a fine-scale contribution allowing for an efficient approximation of the macroscopic solution on coarse meshes. In the project “Numerical analysis of multiscale methods” (https://www.waves.kit.edu/AP5.php), we develop such schemes and prove a priori estimates for the discretization error. A main objective of this project is to develop and analyze multiscale methods for problems with nonlinearities, random perturbations, or multiscale dynamics.

We seek for an ambitious doctoral researcher with an interest in numerical methods for partial differential equations. You will study numerical (finite element based) multiscale methods and learn about their application to wave propagation and nonlinear problems. You will have the opportunity to attend conferences, workshops, and summer schools. Engagement in teaching is encouraged.

We provide 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:**

- Excellent Master or an equivalent degree in Mathematics.
- Strong background in numerical methods for partial differential equations and numerical analysis.
- Programming skills (in MATLAB, python or C++) are beneficial.
- We expect good writing and oral communication skills in English along with the ability to work independently within an international team.

Applications should include a cover letter, a curriculum vitae, a statement of research interest, and copies of degree certificate(s) in one pdf.

**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.

Please apply online via office@waves.kit.edu until November 15th, 2021. For further information, please contact Dr. Barbara Verfürth, barbara.verfurth@kit.edu, or Ms Laurette Lauffer, laurette.lauffer@kit.edu.

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