

Faculty of Mathematics and Natural Sciences

UNIVERSITY OF COLOGNE

## Doctoral student in Applied Mathematics (f/m/x)

Department of Mathematics and Computer Science/Division of Mathematics

We are one of the largest and oldest universities in Europe and one of the most important employers in our region. Our broad range of subjects, the dynamic development of our main research areas and our central location in Cologne make us attractive for students and researchers from around the world. We offer a wide range of career opportunities in science, technology, and administration.

The research focus of the Chair of "Numerical Mathematics and Scientific Computing" is the development, application, and parallel implementation of methods for the numerical solution of partial differential equations. We develop efficient solvers, particularly domain decomposition and multilevel methods, as well as numerical homogenization methods. Furthermore, we are working on accelerating or improving the aforementioned methods through the use of machine learning, for example, in domain decomposition methods or in the development of data-driven and physics-based surrogate models.

## **YOUR TASKS**

- Collaboration and doctoral studies in a research project
- Development of new hybrid methods for the efficient » numerical solution of partial differential equations, i.e., numerical methods accelerated or optimized by machine learning
- Parallel implementation of the new hybrid approaches in common, efficient scientific computing software pack-ages (PETSc, Trilinos, etc.)
- Application of the developed methods in various fields of » medicine or materials science, for example, in the simulation of problems in fluid dynamics or solid mechanics
- Participation in teaching activities in German (3 semes-» ter hours per week)

## **YOUR PROFILE**

- Very good university degree (Master's or Diploma) in 33 mathematics, business or industrial mathematics
- Very good knowledge of the discretization of partial » differential equations
- Very good knowledge of iterative solvers and precondi-» tioners
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- Good knowledge in machine learning Proficient knowledge in C/C++, Python, and common » machine learning libraries (TensorFlow, PyTorch, etc.)
- Solid command of German and English, both written and » spoken
- Good communication and teamwork skills 33

## **WE OFFER**

- A diverse working environment with equal **>>** opportunities
- Support in balancing work and family life **>>**
- Flexible working time models »
- Extensive advanced training opportunities **>>**
- Occupational health management offers **>>**
- Opportunity to work remotely **>>**

The University of Cologne promotes equal opportunities and diversity. Women will be considered preferentially in accordance with the Equal Opportunities Act of North Rhine-Westphalia (Landesgleichstellungsgesetz -LGG NRW). We also expressly welcome applications from all suitable candidates regardless of their gender, nationality, ethnic and social origin, religion, disability, age, sexual orientation and identity.

The positions are available from 1 September 2025 on a part-time basis (29,87 hours per week). The position is to be filled for a fixed term until 31 August 2028. If the applicant meets the relevant wage requirements and personal qualifications, the salary will be based on remuneration group 13 TV-L of the pay scale for the German public sector.

Please apply online with proof of the required qualifications (letter of motivation, CV, list of publications, copies of certificates) without a photo under: https://jobportal.uni-koeln.de. The reference number is Wiss2505-15

The application deadline is 30 June 2025.

For further inquiries, please contact

Professor Dr. Áxel Klawonn

(stellenausschreibung-klawonn@uni-koeln.de) and take a look at our FAQs.

