Johannes Gutenberg University Mainz (JGU) is one of the largest universities in Germany. Thanks to its location in the Rhine-Main science region, the university can unfold to its full potential and showcase its innovative power and dynamism. Its status as a comprehensive university allows for multidisciplinary learning and teaching and has great potential for internationally renowned, interdisciplinary research. Almost all of its institutes are located on a single campus close to the Mainz city center – creating a lively academic culture for researchers, teaching staff, and students from every continent.

Faculty 08: Physics, Mathematics and Computer Science / Institute of Mathematics / Numerical Mathematics Group of Johannes Gutenberg University Mainz

Research Assistant
part-time (75%)

Based on concepts from turbulence modeling, generalized solution frameworks for the Euler equations and Navier-Stokes equations have been developed in recent years and convergence of numerical methods towards such solutions has been investigated. The aim of this project is to derive such a generalized notion of solution for the Navier-Stokes-Korteweg equations (NSK equations) and to investigate convergence properties of structure-preserving numerical methods. The research builds on previous work of our group on the Euler equations as well as on work of our cooperation partner from the Technical University of Darmstadt on numerical methods for the NSK equations. The research is embedded in a larger collaborative project whose goal is to better understand the properties of fundamental equations of fluid mechanics, especially in the context of turbulence. Different research groups contribute expertise from analysis, numerics, stochastics and turbulence modeling.

Your tasks:
- You conduct independent research in a project on numerical methods for fluid equations, in particular development and convergence analysis of numerical methods for the Navier-Stokes-Korteweg equations
- Preparation of research reports and papers in scientific journals
- Presentation of research results in scientific workshops and conferences
- Participation in university level teaching to a small extent

Your profile:
In addition to the general requirements according to public services law, applicants must meet the recruitment requirements stipulated in § 57 of the Hochschulgesetz of Rhineland-Palatinate.

- successfully completed scientific university degree
- good knowledge of analysis and numerics of partial differential equations
- interest in challenging and abstract research questions
- good command of German or English
- good programming skills in at least one higher coding language (e.g. Julia, Fortran, Python, etc.)
- Knowledge on computational fluid dynamics and/or hyperbolic conservations laws are desirable.

What we have to offer:
- A positive and dynamic work environment with secure and friendly working conditions.
- The opportunity to work on a highly topical research question in an inspiring environment encompassing several mathematical research areas.
- Regular exchange between the project partners in Darmstadt and Mainz.
- JGU strongly supports the compatibility of family and career and promotes the professional development of its employees on the basis of an extensive range of personnel development offers.

The position is paid according to salary grade EG 13 TV-L and to be filled on December 1st 2023. Part-time employment is possible in principle.

The opportunity to prepare for a PhD thesis is given.

JGU is diverse and welcomes qualified applications from people with varied backgrounds.

We aim to increase the number of women in the field of research and teaching and therefore encourage female researchers to apply.

Candidates with severe disabilities and appropriate qualifications will be given priority.

Are you ready for a new challenge and interested in this varied and responsible position? Then submit your complete application with the usual documents as one PDF file of max. 10 MB by identification No. 04323-08-wiss-an by November 5th, 2023, at the latest via Email to:

poeffner@uni-mainz.de

For questions and further information please contact PD Dr. Philipp Öffner by e-mail: poeffner@uni-mainz.de.

Data protection information