## Job Advertisement Reg.-Nr. 5-1713/24-D

Martin Luther University Halle-Wittenberg (MLU), Faculty of Natural Sciences III, Institute of Geology and Geography, Germany, offers the following position:

# Doctoral Researcher (m/f/x) on the project "Inversion of fracture networks in aquifers and reservoirs"

Starting date: **May 2024 or earlier/later**, limited to 3 years, 75 per cent of full-time employment. The salary conforms to the regulations of pay group 13 TV-L depending on the nature of the assigned tasks as well as the candidate's individual qualifications.

The movement of subsurface water and geofluids is highly dependent on the geological conditions. In bedrock, commonly fractures and fracture networks serve as preferred flow paths. If hard rocks are intended as groundwater reservoirs, for geothermal use or as nuclear waste repositories, the reliable characterization of the fracture networks is key for in-situ management. This project aims to describe the heterogeneity of the subsurface at different scales using tomographic hydraulic, thermal and geophysical data. For this purpose, three-dimensional inversion methods are further developed in mainly theoretical work steps, and they are validated in practical applications.

**Tasks:**

- Simulation of flow and transport processes in fractured aquifers
- Further development of Bayesian methods for calibrating fracture network models (discrete fracture networks, DFNs)
- Co-supervision of students
- Publication of high-quality scientific results

**Requirements:**

- Master's degree, diploma or equivalent in the natural or engineering sciences (e.g. environmental sciences, geosciences, geophysics, physics, mathematics, mechanical engineering)
- Experience in numerical simulation of fluid flow and transport
- Knowledge of data assimilation, optimization and inversion techniques is an advantage
- Programming knowledge (e.g. in Python or Matlab)
- Fluent written and spoken English skills. Knowledge of German is an advantage.

The Martin Luther University Halle-Wittenberg gives priority to applications from severely disabled candidates with equivalent qualifications. Women are particularly encouraged to apply.

The hosting research team offers excellent conditions for carrying out the work and modelling within a strong international network of partners from industry and academia. Candidates can expect an interdisciplinary, collegial and open-minded working atmosphere. Queries concerning the application process and project-related questions should be directed to the head of the research unit, Prof. Peter Bayer - https://applied.geo.uni-halle.de.

**All applications should include:**

- Cover letter in English (or German) shortly describing the motivation for the project, research interests and relevant experience
- Complete curriculum vitae including contact details of two referees
- Digital copy of Master's/Bachelor's/Diploma degree certificates

All documents should be submitted as one **single pdf file**.

Applicants with a degree that was not obtained at a German university must submit a certificate assessment for foreign university qualifications (Statement of Comparability for Foreign Higher Education Qualifications) from the Central Office for Foreign Education (https://www.kmk.org/zab/central-office-for-foreign-education). This can be provided later after being invited for the interview.

Kindly send your application, quoting the reference number 5-1713/24-D to Prof. Peter Bayer (peter.bayer@geo.uni-halle.de). The **submission deadline is March 31, 2024.** Selected candidates may be invited to an interview already before this deadline. The position is offered with reservation of possible budgetary restrictions. Application portfolios will not be returned, and application costs cannot be reimbursed.