

Martin Luther University Halle-Wittenberg (MLU) invites applications for the following position:

**Researcher on the project  
"Optimization and predictive control of shallow geothermal systems"**

Starting date: **earliest possible**, limited to 2 years, full-time employment, salary will be up to E 13 TV-L if the personal requirements are fulfilled. The work place will be located in the city of Halle, Germany.

We are a young international team of geoscientists and engineers with special interest in interdisciplinary research. It will be realized in close collaboration with international partners from Sweden, Switzerland and Germany. The overarching goal of the project is the automatization of shallow geothermal systems, enabling more cost-efficient use and storage of heat in the ground. The work by researcher to be recruited includes **simulation, and in particular real-time control of geothermal systems**. This will be addressed by using digital twin representations as well as novel data from high-resolution field experiments with borehole heat exchangers, thermal storage devices and ground-source heat pump systems. The key task is to elaborate a practical and efficient solution to be implemented in model-predictive control units in the field.

**Tasks:**

- Development and application of computer-based methods for mathematical control and automatization of shallow geothermal systems
- Modelling/simulation of subsurface heat transport
- Cooperation with international partners for joint implementation and practical application
- Co-supervision of students
- Publication of high-quality scientific results

**Requirements:**

- Master or equivalent degree in a project-related field (e.g. environmental engineering, mechanical engineering, energy engineering, control theory, applied mathematics, physics)
- Excellent knowledge in control theory and application
- Very good skills in quantitative and computer-based simulation
- Knowledge and interest in theoretical aspects of flow and heat transport processes
- Fluent in English communication in writing and speaking. Knowledge of German is an advantage
- A clear drive to do interdisciplinary theoretical and applied science

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 computational 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) describing shortly motivation for the project, research interests and relevant experience
- Complete curriculum vitae including contact details of at least 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 submitted later when invited for the interview.

Kindly send your application, quoting the reference number 5-13771/22-D to Prof. Peter Bayer ([peter.bayer@geo.uni-halle.de](mailto:peter.bayer@geo.uni-halle.de)). **Submission deadline is 15 December 2022**. 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, application costs cannot not be reimbursed.