Helmholtz-Zentrum Dresden-Rossendorf e.V.

With cutting-edge research in the fields of ENERGY, HEALTH and MATTER, around 1,500 employees from more than 70 nations at Helmholtz-Zentrum Dresden-Rossendorf (HZDR) are committed to mastering the great challenges facing society today. The Institute of Resource Ecology performs research to protect humans and the environment from hazards caused by pollutants resulting from technical processes that produce energy and raw materials. The Department of Thermodynamics of Actinides is looking for a PhD Student (f/m/d) Development of Digital Twins (DT).

PhD Student (f/m/d) Development of Digital Twins (DT)

The Development of DT for complex installations such as a deep geological repository for nuclear waste is both a strategic necessity and a challenge. The Department of Actinide Thermodynamics of the Institute of Resource Ecology is looking for a PhD Student (f/m/d) providing contributions to a digital twin for a deep geological repository for radioactive waste with the focus on contaminant transport. In the 2nd year there is the option of increasing the weekly working hours to 75%.

City: Dresden; Starting date (earliest): 01/06/25; Remuneration: TVöD-Bund; Reference number: 2025/49; Closing date: 14/04/25

Working field

-Literature survey for State-of-the-Art report for DT concepts and implementations in nuclear waste disposal
-Identification of suitable models for major processes of radionuclide migration in the geological environment, as well as respective codes / solvers
-Connecting codes in an interactive way, including data bases, with respective documentations
-Evaluation of DT modules with respect to their efficiency and robustness
-Simulations (proof-of-concept) of radionuclide transport based on the DT and consequence analyses
-Preparation of publications to scientific journals and presentation of results in conferences
-Cooperation within the project partners at KIT and FZ Jülich

Requirements

-Completed university studies (Master/Diploma) in the field of chemistry, physics, geosciences or computer sciences or related field
-Understanding of computational approaches to large scale simulations
-Basic knowledge of (geo)chemical processes and machine learning will be of advantage
-Expertise in Machine Learning approaches, ideally beyond neural networks
-Good interdisciplinary communication skills
-Excited about working as a team player in a group of multidisciplinary scientists
-Structured and solution-oriented working style, analytical thinking and above-average

commitment
-Excellent English skills
-Good programming skills in a high-level data science language (e.g. R/python/julia)

What we offer

-A vibrant research community in an open, diverse and international work environment
-Scientific excellence and extensive professional networking opportunities
-A structured PhD program with a comprehensive range of continuing education and networking opportunities - more information about the PhD program at the HZDR can be found here
-Salary and social benefits in accordance with the collective agreement for the public sector (TVöD-Bund) including 30 days of paid holiday leave, company pension scheme (VBL)
-We support a good work-life balance with the possibility of part-time employment, mobile working and flexible working hours
-Numerous company health management offerings
-Employee discounts with well-known providers via the platform Corporate Benefits
-An employer subsidy for the "Deutschland-Ticket Jobticket"

Application

We look forward to receiving your application documents (including cover letter, CV, diplomas/transcripts, etc.), which you can submit via our online-application-system: https://www.hzdr.de/db/Cms?pNid=490&pLang=en&pOid=74312

More information at https://stellenticket.de/192110/TUBS/
Offer visible until 22/03/25

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