Helmholtz-Zentrum Dresden-Rossendorf e.V.

HZDR
HELMHOLTZ ZENTRUM DRESDEN ROSSENDORF

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 Center for Advanced Systems Understanding (CASUS) is a German-Polish research center for data-intensive digital systems research. The Institute of Fluid Dynamics conducts both fundamental and applied research in the fields of thermo-fluid dynamics and magnetohydrodynamics to enhance the sustainability, the energy efficiency, and the safety of industrial processes. In a joint effort of both institutes, the Department AI4Quantum – Machine Learning for Quantum Simulation and Computing and Thermal Energy and Process Engineering are looking for a

PhD Student (f/m/d) in Quantum Algorithms for Droplet and Bubble Oscillation Dynamics Modelling

City: Dresden; Starting date (earliest): 01/04/26; Remuneration: TVöD-Bund; Reference number: 2026/28; Closing date: 19/03/26

Tasks

- Development and implementation of numerical and algorithmic methods for the simulation of fluid-dynamical or environmental systems
- Research on quantum and hybrid quantum–classical algorithms for solving partial differential equations
- implementation, testing, and benchmarking of computational methods on high-performance computing and quantum computing platforms
- Analysis and validation of results using classical reference models and simulation data
- Documentation of research results and contribution to scientific publications and project reports

Requirements

- Completed university studies (Master/Diploma) in the field of Physics, Applied Mathematics, Computer Science, Computational Modeling and Simulation or related field
- Knowledge of Numerical solution of partial differential equations
- Knowledge of Scientific computing / high-performance computing
- Knowledge of Algorithmic modeling and simulation
- Fundamentals of machine learning or quantum computing
- Programming skills in Python and/or C/C++
- Experience with scientific software tools and numerical libraries
- Familiarity with Linux-based computing environments
- Ability to work independently and in a structured manner
- Strong analytical thinking and problem-solving skills

- Willingness to collaborate in interdisciplinary research teams
- Motivation to engage in scientific research and method development
- Good written and oral communication skills
- English language proficiency (written and spoken)

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=76871

More information at https://stellenticket.de/201849/TUBS/
Offer visible until 19/03/26

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