

Job Description: PhD position

Structures in Supercooled Water

Physics or related field (m/f/d)

Start date:

September 1, 2023 or later

Duration:

3 years

Compensation:

Up to pay grade 13 TVöD

Employment:

part-time



Your mission:

The Institute of Materials Physics in Space is one of the leading institutes worldwide in the exploration of fundamental physical properties and the solidification of metallic liquids, soft matter, and granular systems. In addition to experimental work in the laboratory and in microgravity, the institute works on computer simulations and theory to understand the physical phenomena that occur.

The Quantum Computer Initiative is a major project of the German Aerospace Center in the development and use of quantum computers. In the field of materials physics, the initiative aims to lay the foundations for the future effective use of quantum hardware and corresponding algorithms.

In the field of molecular and ab initio calculations, fundamental progress is expected from the utilization of quantum hardware. These new opportunities shall be combined with existing theoretical and experimental work at DLR and ICTP on structure and dynamics of water. Here, analytical predictions shall be refined and compared with numerical calculations both classical and quantum. Data from both experiments as well as computer simulation studies shall be analyzed.

As a part of this initiative, you will be responsible for the following tasks:

- Development and extension of classical and quantum computer algorithms for the calculation of structures in water using ab initio and molecular dynamics methods
- Development of software to use available hardware as well as quantum hardware
- Publication of results in scientific journals and presentations at international scientific conferences

Your qualifications:

- Degree in computer science, mathematics, physics, chemistry, or biology
- Good programming skills, preferably in C++ and Python
- Good English language skills
- Preferably research experience in the field of molecular dynamics or ab initio, experience in quantum computing is helpful

The dissertation work shall be performed at DLR in Cologne in collaboration with the International Centre for Theoretical Physics (ICTP) in Trieste, Italy.

Your start:

Look forward to an employer who values your commitment and promotes your development through diverse qualification and further training opportunities. Our unique working environment offers you creative freedom and an unparalleled infrastructure in which you can achieve your mission. Work-life balance, family and career compatibility, as well as equal opportunities for people of all genders (m/f/d), are important components of our personnel policy. We give preference to applications from qualified disabled individuals.

Contact Person:

Prof. Dr. Matthias Sperl, matthias.sperl@dlr.de

Reference number: 85272

Online Application Form:

https://www.dlr.de/dlr/jobs/en/desktopdefault.aspx/tabid-10596/1003_read-51660/