



With more than 6,300 employees in research, teaching and administration and its unique profile, TU Dortmund University shapes prospects for the future: The cooperation between engineering and natural sciences as well as social and cultural studies pro-motes both technological innovations and progress in knowledge and methodology. And it is not only the more than 32,500 students who benefit from that.

## 2 PhD positions

The Department of Physics at TU Dortmund University offers two PhD Positions. The duration of the positions will be limited to three years. According to the public tariff regulations, the salary is based on the tariff group E13 TV-L with 75 % of the regular work time.

Ultracold atoms have established as an excellent experimental platform for analog quantum computing of quantum many-body systems. Dissipation usually appears as a problem in quantum technologies, which has to be overcome. In the project „Stabilization of crystalline and topological phases using dissipation“ within FOR 5688 we utilize the excellent isolation of our system for stabilization relevant quantum phases via controlled dissipation.

### Your tasks:

In the course of the two PhD projects, an experimental apparatus for the production of quantum gases of ultracold lithium atoms [<https://arxiv.org/abs/2410.10611>] shall be further developed and used for testing new protocols. This includes the coupling to a bath, the implementation of local projective measurements and the preparation of stationary steady states via the transfer into different spin states.

### Your Qualification:

Applicants should possess a university degree in physics or related subjects. Detailed knowledge of the experimental physics of quantum gases and the ability to communicate physics spoken and written are necessary. Enjoyment of experimental challenges and team work are helpful.

### We offer:

The research group „Ultracold Quantum Gases“ is part of the new research focus on atomic and molecular physics at TU Dortmund University. The group works with experimental methods such as laser cooling, Floquet engineering and quantum-gas microscopy towards analog quantum computing for new insights into quantum many-body physics.

The TU Dortmund University promotes diversity and equal opportunities. Convince us with your personality and expertise. Applications from women will be given preferential treatment in accordance with the legal regulations. It is pointed out that the application of suitable severely disabled persons is desired. Complete applications including a cover letter, CV, a max. two-page outline of research interests, certificates and at least two contacts for further references should be sent stating reference number **w59-25** until **22.07.2025** to:

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