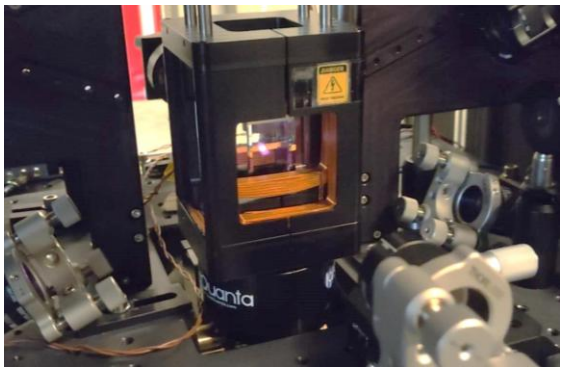
Open PhD/postdoc positions: Quantum memories in microgravity

We are looking for motivated PhD/Postdocs to join a research project supported by the German Aerospace Centre (DLR) with funds from the BMFTR to pioneer microgravity-compatible quantum memory platforms based on atomic ensembles. The work builds directly on the past years of our group's focussed research on quantum memories for space, and aims to take the next steps toward robust operation in realistic mission scenarios and testing new memory lifetime extension methods, including operation at microgravity facilities.

You will gain hands-on experience with advanced experimental techniques in a strongly interdisciplinary setting, and work closely within both international and domestic research networks. The project also includes experimental campaigns at the Bremen Drop Tower facility.



Position A (ultracold atomic ensembles):

- Experimental research on quantum memories using cold atomic ensembles
- Design and implementation of a compact Raman laser system
- Investigation of coherence extension and storage-time enhancement via density-engineering techniques proposed by our group.
- Microgravity experiments at microgravity facility in Bremen in close cooperation with ZARM
- Background work: Phys. Rev. Research **5**, 033003 (2023)

Position B (warm atomic vapours):

- Experimental research on quantum memories based on warm vapours
- Development of a compact, transportable quantum memory system that can survive in harsh operation conditions.
- Close cooperation with our group at Ferdinand-Braun-Institute to develop a microintegrated quantum memory module
- Mobile measurement campaigns and microgravity validation at the Bremen Drop Tower
- Background work: Phys. Rev. Applied **23**, 024045 (2025)

Official reference: https://www.hu-berlin.de/universitaet/arbeiten-an-der-hu/stellenangebote

Please contact us for more information:

Dr. Elisa Da Ros
elisa.da.ros@physik.hu-berlin.de

Dr. Mustafa Gündoğan
mustafa.guendogan@physik.hu-berlin.de
Prof. Markus Krutzik
markus.krutzik@physik.hu-berlin.de

https://iqs.berlin/