




Munich Quantum Valley

Advancing quantum computation
and quantum technologies



A multitude of current challenges in science and technology push even today's supercomputers to their limits. Initial successes with quantum systems indicate that future universal quantum computers could overcome these challenges.

Harnessing three of the most promising technology platforms - superconducting, neutral-atom, and trapped-ion qubit systems - the Munich Quantum Valley (MQV) will develop and operate competitive quantum computers in Bavaria.

As a hub between research, industry, funders, and the public, MQV is the crystallization point for the development of the full spectrum of quantum technologies. It fosters an efficient knowledge transfer from research to industry, establishes a network with international reach and provides tailor-made education and training opportunities in the fields of quantum science and technology.

Development of quantum computers

In a unique holistic approach the Munich Quantum Valley follows a “full-stack” quantum-computer model implementing cutting edge research results of quantum information science.

Multidisciplinary consortia developing all layers, from hard- and software up to applications, create maximum synergy.

Lighthouse Projects and research collaborations

Lighthouse Projects strengthen and complement the work of the MQV consortia and cover the entire range of quantum science and technology. All Bavarian universities, research institutions and companies are invited to apply.

The MQV catalyzes and supports the formation of state and federally funded research collaborations.





R&D professorships

New professorships will be established to further boost the work on quantum technologies, to collaborate with Lighthouse Projects and to provide additional expertise for a broad education in all areas of quantum technologies.

Education and training

With education opportunities, ranging from high school courses and programs for professionals to university levels, the MQV will build a quantum workforce and train a new generation of quantum natives. Outreach activities for the public will establish a broad understanding of quantum technologies and its benefits for society.

Entrepreneurship

Start-ups in quantum technologies are supported by entrepreneurship measures providing advice, office and laboratory space as well as initial funding.

A technology park will provide young companies with the necessary high-tech infrastructure for the production of quantum devices and the development of applications.

Creating a thriving quantum eco-system

Research

- Targeted development of quantum computers utilizing three promising technology platforms
- Research and application-oriented Lighthouse Projects
- State and federally funded research collaborations
- R&D professorships

Education

- Master program, Master & PhD fellowships, application-oriented internships
- Material for high school students and teachers
- Training opportunities for professionals and executives
- Public engagement activities

Entrepreneurship

- Promotion of start-up companies
- Establishment of a quantum technology park providing high-tech infrastructure for the development and fabrication of quantum devices

Quantum technologies for science, research and industry

The Munich Quantum Valley collaboration unites research capacities and technology transfer power of three major universities and key research organizations: the Bavarian Academy of Sciences and Humanities (BAdW), the Fraunhofer-Gesellschaft (FhG), the Friedrich-Alexander-Universität Erlangen-Nürnberg (FAU), the German Aerospace Center (DLR), the Ludwig-Maximilians-Universität (LMU) München, the Max Planck Society (MPG), and the Technical University of Munich (TUM). Their joint work will advance quantum technologies at all levels for future use in science, research and industrial applications.



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Contact

Munich Quantum Valley e.V.
Leopoldstr. 244
80807 Munich, Germany

info@munich-quantum-valley.de
www.munich-quantum-valley.de

 [linkedin.com/company/munichquantum](https://www.linkedin.com/company/munichquantum)

 [@MunichQuantum](https://twitter.com/MunichQuantum)