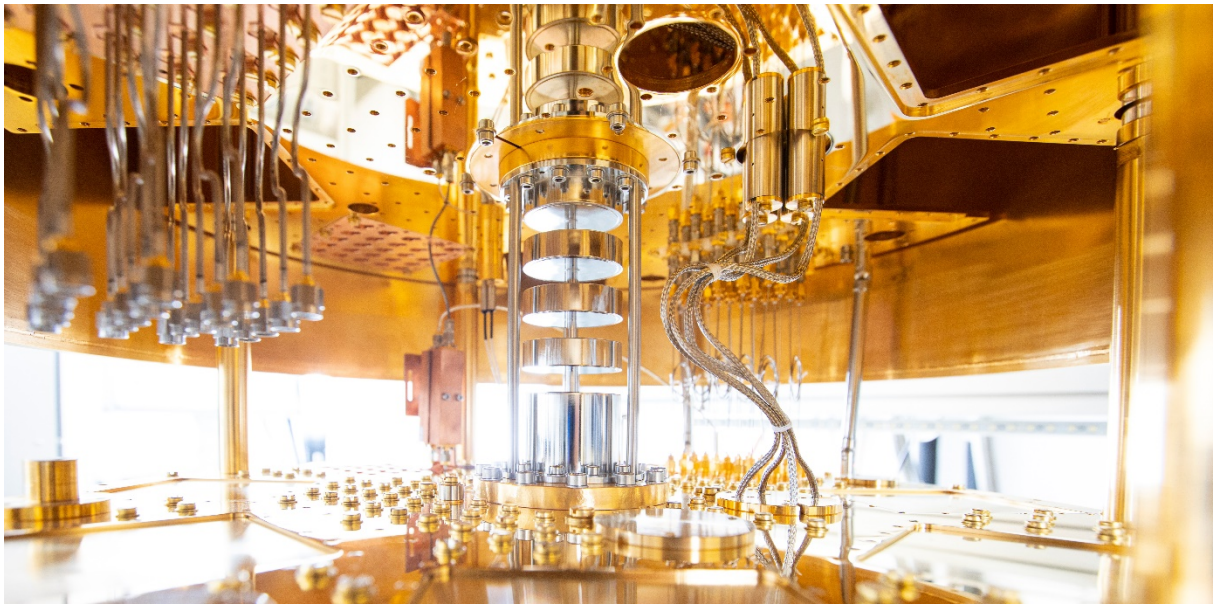
Forschungszentrum Jülich and the Jülich Supercomputing Centre

Conducting research for a changing society: This is the mission of more than 6,000 employees working hand in hand at Forschungszentrum Jülich. We want our research to have an impact. That's why we conduct research into the fundamentals, technologies, and systems of a digitized society, a climate-friendly energy system, and a resource-efficient economy. At Jülich, natural, life, and engineering sciences in the fields of information, energy, and the bioeconomy are closely linked with our specialist expertise in high-performance computing and benefit from the use of unique scientific infrastructure. We are one of the largest interdisciplinary research institutions in Europe and contribute to solving the grand societal challenges of our time as a member of the Helmholtz Association.

Research Focus Information

Jülich scientists focusing on the research priority of information investigate how information is processed in biological and technical systems. To this end, research at Jülich combines three areas: simulation and data science using high-performance computing (HPC), brain research, and research into bioelectronics- and nanoelectronics-based information technologies of the future. For Jülich researchers, big data has long been part of their everyday life. They are analysing the flood of data to find answers to complex issues in fields such as climate research, neuroscience, and materials research. To this end, they use JUWELS, Europe's current fastest supercomputer, and develop modular hardware architectures for exascale computing. Quantum technologies are another research priority at

Jülich – from basic research to application. As part of the EU Quantum Flagship, which is the largest quantum computing initiative in Europe, the first freely programmable European quantum computer will be established at Jülich.



Jülich Supercomputing Centre

The scientific methods and instruments set up, operated, and developed by Forschungszentrum Jülich and its partners are a perfect match for our scientific spectrum and our interdisciplinary approach. Institutions such as the Jülich Supercomputing Centre (JSC) or the Helmholtz Quantum Center (HQC) are world-class infrastructures that complement each other and which are also available to external researchers. JSC supports scientists working at Forschungszentrum Jülich, universities, and research institutions in Germany and throughout Europe in their research projects by giving them access to computing capacity of the highest performance class. However, JSC's resources and experts are not only available for large-scale projects. In 2020, for example, more than 1,000 researchers used the HPC systems of the Jülich Supercomputing Centre within the scope of small-scale cooperation projects.

The Jülich UNified Infrastructure for Quantum computing (JUNIQ) offers its users access to systems at various stages of their technological maturity and simulations of quantum computers on high-performance computers. Through JUNIQ, we will strengthen JSC's leading position in Europe and enhance its global standing. This is the first time worldwide that a supercomputing facility has been expanded to include the quantum range. The 5,000+ qubit Advantage system is the first D-Wave system in Europe and will underline the importance of JUNIQ as a flagship project.