

PRESS RELEASE

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Federal Chancellor visits Fraunhofer IOF*Friedrich Merz praises Thuringia's contribution to international quantum research**Jena (Germany)*

Federal Chancellor Friedrich Merz visited the Fraunhofer Institute for Applied Optics and Precision Engineering IOF in Jena today. As part of his inaugural visit to Thuringia, he toured one of the institute's quantum laboratories and was given a presentation by researchers on the core components of a photonic quantum computer and state-of-the-art systems for global quantum communication.

Following an invitation from Thuringia's minister-president Mario Voigt, Chancellor Friedrich Merz stopped at Fraunhofer IOF in Jena during his inaugural visit to the Free State. During a tour of the laboratory, Merz gained insights into current future research with a focus on quantum technologies "made in Thuringia."

The Chancellor was impressed by the innovative strength of Thuringia as a location: "I gained impressive insights today at the Fraunhofer institute for Optics and Precision Engineering. Quantum computing and quantum communication have enormous potential. I was also able to see for myself how valuable the support of the German federal government for the university landscape and non-university research institutions here is in providing the local industry with highly qualified specialists. This makes Jena international and successful beyond the borders of Thuringia and Germany."

Thuringia's minister-president Mario Voigt added: "Fraunhofer IOF impressively demonstrates the future potential of Thuringia. Jena is setting standards, particularly in quantum research, which is internationally regarded as a key technology for the coming decades. The approaches developed here strengthen our digital and technological sovereignty and create prospects that extend far beyond the scientific community – for new value creation, highly qualified jobs, and Thuringia as a strong location for innovation."

I am very pleased to be able to show the Chancellor this center for future research today. Close cooperation between the federal and the state governments, combined with the pioneering spirit of our research scientists, puts Thuringia at the forefront of technological competition. Jena generates ideas that attract worldwide attention and are directly transferred to the economy.

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We want to continue along this path – so that Thuringia remains a reliable, creative, and leading engine for innovation: with strong research institutions, competitive companies, and the bright minds we need to achieve this.”

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High-Tech Agenda emphasizes the importance of quantum technologies

“Quantum technologies have great potential for Germany's innovative and economic strength. Anchoring this key technology in the High-Tech Agenda recently adopted by the German government is therefore exactly the right thing to do. Thanks to excellent research, such as here at Fraunhofer IOF, Germany can tap into future markets in this sector at an early stage and take on a long-term leading role in global competition,” said Prof. Holger Hanselka, president of the Fraunhofer-Gesellschaft. “It is now important that industry, politics, and science continue working together consistently and use the favorable starting position to more quickly turn research into innovation and innovation into value creation.” As a systematically important partner to industry, Fraunhofer is ready to support this effort, Hanselka affirms: “We will play a key role in ensuring that our location can sustainably utilize and expand its strengths – from quantum technologies to artificial intelligence and microelectronics to biotechnology. The visit by the Chancellor and the minister-president of Thuringia emphasizes how important applied research is for the location – and how Fraunhofer is demonstrating with concrete projects how scientific excellence can be directly translated into innovation.”

Chancellor visits systems for quantum computing and communication

The visit is also a significant commendation according to Andreas Tünnermann, Director of Fraunhofer IOF: “The Chancellor's visit is a great honor for our institution and the achievements of our employees. During a tour of a quantum laboratory in our newest research building, our researchers presented him with, among other things, the heart of a photonic quantum computer: a photonic integrated chip. This was developed in cooperation with partners from Germany as part of the PhoQuant project funded by the Federal Ministry of Research, Technology and Space.”

The [PhoQuant](#) project aims to build Germany's first photonic quantum computer. Quantum computers are the next generation of high-performance computers. They will far exceed the computing power of conventional computers in solving complex problems and herald a new digital age. A photonic quantum computer is a special form of quantum computer. Unlike other quantum computers, which require complex cooling, a photonic quantum computer can operate at room temperature. As a result, this technological approach is more user-friendly, easier to integrate, and more scalable.

The Chancellor also visited Fraunhofer IOF's new optical ground station. It plays an important role in the development of new, highly secure communication systems based on light quanta. “With their enormous computing power, quantum computers open up new possibilities, for example in the simulation of molecules and thus the development of new materials or medicines,” Andreas Tünnermann continued. “At the same time,

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however, they also lead to a paradigm shift in the security of our data. Conventional encryption methods will no longer be sufficient to protect our data in the long term.”

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This challenge is being addressed by the [QuNET initiative](#), a major offensive to develop state-of-the-art quantum communication, which is also funded by the Federal Ministry of Research, Technology and Space with 125 million euros. This initiative has been implemented since 2019 under the coordination of Fraunhofer IOF. [Recent QuNET experiments](#) have successfully demonstrated the integration of mobile platforms such as aircraft into a quantum network. The new optical ground station takes this research to the next level and will enable quantum communication via satellite in the future. “Thanks to funding from the Free State of Thuringia, the ground station in Jena is the only optical ground station in Germany, alongside a station in Oberpfaffenhofen, to research and test satellite-based quantum key distribution and thus the foundations of a prospective global quantum network,” said Tünnermann.

About Fraunhofer IOF

The Fraunhofer Institute for Applied Optics and Precision Engineering IOF in Jena conducts application-oriented research in the field of photonics and develops innovative optical systems for controlling light - from its generation and manipulation to its application. The institute's range of services covers the entire photonic process chain from opto-mechanical and opto-electronic system design to the production of customer-specific solutions and prototypes. At Fraunhofer IOF, about 500 employees work on the annual research volume of 40 million euros.

For more information about Fraunhofer IOF, please visit: www.iof.fraunhofer.de

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The **Fraunhofer-Gesellschaft**, headquartered in Germany, is one of the world's leading organizations for applied research. It plays a major role in innovation by prioritizing research on cutting-edge technologies and the transfer of results to industry to strengthen Germany's industrial base and for the benefit of society as a whole. Since its founding as a nonprofit organization in 1949, Fraunhofer has held a unique position in the German research and innovation ecosystem. With nearly 32,000 employees across 75 institutes and legally independent research units in Germany, Fraunhofer operates with an annual budget of €3.6 billion, €3.1 billion of which is generated by contract research — Fraunhofer's core business model.