FALLING WALLS CIRCLE

PLENARY TABLE "PERSPECTIVES AND CHALLENGES IN QUANTUM COMPUTING"

Quantum computing has emerged as a revolutionary technology that promises to transform various fields, from drug discovery to optimisation problems and cryptography to artificial intelligence. This Falling Walls Circle brings together leading experts from research and industry to discuss the current state of the art in quantum computing and give a realistic assessment of the emerging applications.

Panelists: Juan Ignacio Cirac (Max-Planck-Institute for Quantum Optics, DE), Sabrina Maniscalco (University of Helsinki, FI), Andreas Wallraff (ETH Zürich, CH), Horst Weiss (BASF, DE), and moderator Jan-Martin Wiarda (Independent Journalist, DE).

KEY TAKEAWAYS

1. **Manage expectations and unrealistic hopes.** While certain applications have already showcased quantum computing's potential, the technology is still evolving. To not impede the technology's potential from the start, it is important to manage expectations and caution against unrealistic hopes, particularly in areas like cancer research and AI. The experts point out that quantum computers are complementary to classical computers and not their replacements. Viable commercial applications and products may still be 5 to 10 years away.

2. **Establish a backbone of public funding.** To grow the ecosystem and the capability to perform controlled simulations and calculations, funding is critical. Although the panel acknowledges ongoing initiatives by the EU and several member states, public funding currently trails behind efforts in China and the US with its huge venture capital scene. "I expect from policy makers that they act accordingly and that they understand that this technology is important", says Horst Weiss. Europe cannot afford a "quantum winter" just because other technologies, such as generative AI, are more hyped at the moment. According to the experts, a backbone of public funding, a well-defined technological roadmap, long-term political commitment, and the cultivation of a future workforce skilled in quantum technologies are key components to establishing Europe as a global quantum leader.

3. **Exchange ideas, do not work behind closed doors.** The panel stipulates a visionary yet cautious approach, striking a balance in technology disclosure and encouraging the active participation of universities, start-ups, tech corporations and international stakeholders. With quantum computers considered a leading technology of this century, there is currently a risk of developments happening behind closed doors. To leverage this technology on a global scale, the panel calls for a broad exchange of ideas and data and points to the potential for quantum computing in Europe. In the words of Andreas Wallraff, "there was never a better time to found a company in this sector."

This event is supported by Berlin Quantum Alliance, Hamburg Quantencomputing, Jülich Quantum Computing Alliance, Munich Quantum Valley, Quantum BW & Quantum Valley Lower Saxony.