



The Quantum Breakthrough

Fraunhofer-Gesellschaft
Hansastr. 27c
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**FUTURAS IN RES,
Sept. 28 – 29, 2022**

The Quantum Breakthrough

Understanding the complex effects of new technologies and disruptive innovations is essential for the success of entire societies and economies. This is why the Fraunhofer-Gesellschaft has established its international science and technology conference series "FUTURAS IN RES", to get into discourse about future-oriented topics with experts from science, industry and society - this year on the topic of quantum technologies.

The second-generation quantum technologies are already generating high economic and industrial interest and hold much promising potential for innovation and the future. This research field opens up new possibilities like unprecedented image resolution and measurement precision, tamper-proof communication and methods for solving complex calculations that are out of reach of classical machines. The path from basic research to application is emphasized by the conference motto "The Quantum Breakthrough".

I am looking forward to our distinguished keynote speakers and talks about industrial applications and future challenges as well as scientific presentations on quantum computing, communication, imaging and sensing.

Sincerely yours,



Prof. Dr.-Ing. Reimund Neugebauer
President of the Fraunhofer-Gesellschaft

Day 1, Sept. 28, 2022

Plenary session program

- 9:00 a.m. **Registration and welcome coffee**
- 9:30 a.m. **Keynotes: "Road to industrialization"**
Prof. Reimund Neugebauer
President, Fraunhofer-Gesellschaft
Dr. Fabian Lausen
Federal Ministry of Education and Research (BMBF)
Prof. Markus Aspelmeyer
Professor of Physics, University of Vienna
Prof. Rainer Blatt
Founder, Alpine Quantum Technologies
Dr. Kevin Füchsel
CEO, Quantum Optics Jena
- 11:30 a.m. **Lunch**
- 12:30 p.m. **Keynotes: "Industrial applications"**
Dr. Kees Eijkel
Director of Business development, QUTech
Dr. Wilhelm Kaenders
Member of Executive Board, CTO and
Co-founder, TOPTICA Photonics
Dr. Katrin Kobe
CEO, Bosch Quantum Sensing Start-up
Dr. Heike Riel
IBM Fellow, Head of Science and Technology,
Lead Research Quantum Europe and Africa, IBM
Grazia Vittadini
Chief Technology and Strategy Officer,
Rolls-Royce
- 2:30 p.m. **End of plenary program**

Day 1, Sept. 28, 2022

R&D Workshop sessions

3:00 p.m. **Parallel workshops**

Session I: Quantum Imaging and Sensing

Session II: Quantum Communication

Session III: Quantum Computing

7:00 p.m. **Get together**

Day 2, Sept. 29, 2022

9:00 a.m. **Workshop result presentations**

11:00 a.m. **End of conference**

Moderation plenary sessions and result presentation

Prof. Anita Schöbel

Institute Director, Fraunhofer ITWM

Prof. Andreas Tünnermann

Institute Director, Fraunhofer IOF

Prof. Raoul Klingner

Director Research, Fraunhofer-Gesellschaft

Conference venue

Hilton Berlin

Mohrenstraße 30,

10117 Berlin, Germany

Parallel R&D workshops

Session I: Quantum Imaging and Sensing



3:00 p.m. **Session chairs and moderation**

Prof. Karsten Buse

Institute Director, Fraunhofer IPM

Prof. Rüdiger Quay

Institute Director, Fraunhofer IAF

Prof. Wilhelm Kaenders

Member of Executive Board, CTO and

Co-founder, TOPTICA Photonics

Workshop impulse presentations

Prof. Vahid Sandoghdar

Director, Max-Planck-Institute for the
Science of Light

Prof. Svenja Knappe

Professor, University of Colorado

Prof. Mathieu Munsch

CEO and Co-founder, Qnami

Dr. Frank Kühnemann

Group Manager Nonlinear Optics and Quantum
Sensing, Fraunhofer IPM

4:30 p.m. **Coffee break**

5:00 p.m. **Workshop discussion**

7:00 p.m. **Get together**

Parallel R&D workshops

Session II: Quantum Communication

3:00 p.m. **Session chairs and moderation**

Prof. Ronald Freund

Head of Department, Fraunhofer HHI

Prof. Christoph Günther

Institute Director, German Aerospace Center (DLR)

Workshop impulse presentations

Dr. Florian Fröwis

General Manager, ID Quantique Europe

Dr. Bernd Jungbluth

Group Manager, Fraunhofer ILT

Prof. Harald Weinfurter

Head of Faculty of Physics, LMU Munich

Dr. Julian Struck

Systems Engineer Satellite-Based Quantum Communication, TESAT-Spacecom

Dr. Martin Wölz

Product Manager Quantum Communications, Jena-Optronik

Florian Moll

Project Manager QuNET, DLR

Dr. Andreas Poppe

Project Scientist, Austrian Institute of Technology (AIT)

Dr. Nino Walenta

Project Manager Photonic Quantum Technologies, Fraunhofer HHI

4:30 p.m. **Coffee break**

5:00 p.m. **Workshop discussion**

7:00 p.m. **Get together**

Parallel R&D workshops

Session III: Quantum Computing

3:00 p.m. **Session chairs and moderation**

Prof. Manfred Hauswirth

Institute Director, Fraunhofer FOKUS

Dr. Jan Goetz

CEO and Co-founder, IQM Germany

Workshop impulse presentations

Dr. Jan Goetz

CEO and Co-founder, IQM Germany

Prof. Christian Baukhage

Professor of Computer Science, Fraunhofer IAIS

Replacement

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Dr. Matthias Kabel

Team Leader Lightweight Design and Insulating Materials, Fraunhofer ITWM

Marco Paini

Director Europe, Rigetti

Prof. Wolfgang Lechner

CEO and Co-founder, ParityQC

4:30 p.m. **Coffee break**

5:00 p.m. **Workshop discussion**

7:00 p.m. **Get together**