



QP-TECH.EDU

# Online Workshop on Quantum Technologies

For up-to-date information, see

[www.acp.uni-jena.de/qp-tech-edu](http://www.acp.uni-jena.de/qp-tech-edu)

The second quantum revolution is ongoing and will result in novel applications based on the use of quantum phenomena. In order to keep pace with this development, an active response from German industry is vital. In addition to learning the scientific basics, companies recognize the potential of quantum technologies for their own products and markets and derive company-specific strategies. Key scientific players in quantum photonics in Germany and industrial companies are cooperating in qp-tech.edu with the aim of creating the personnel requirements for the implementation of photonic quantum technologies in the German photonics industry.

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In corporation with:

**optonet**  
Photoniknetzwerk Thüringen

**IQBN**

**Fraunhofer**  
IOF

## October 12th, 2022

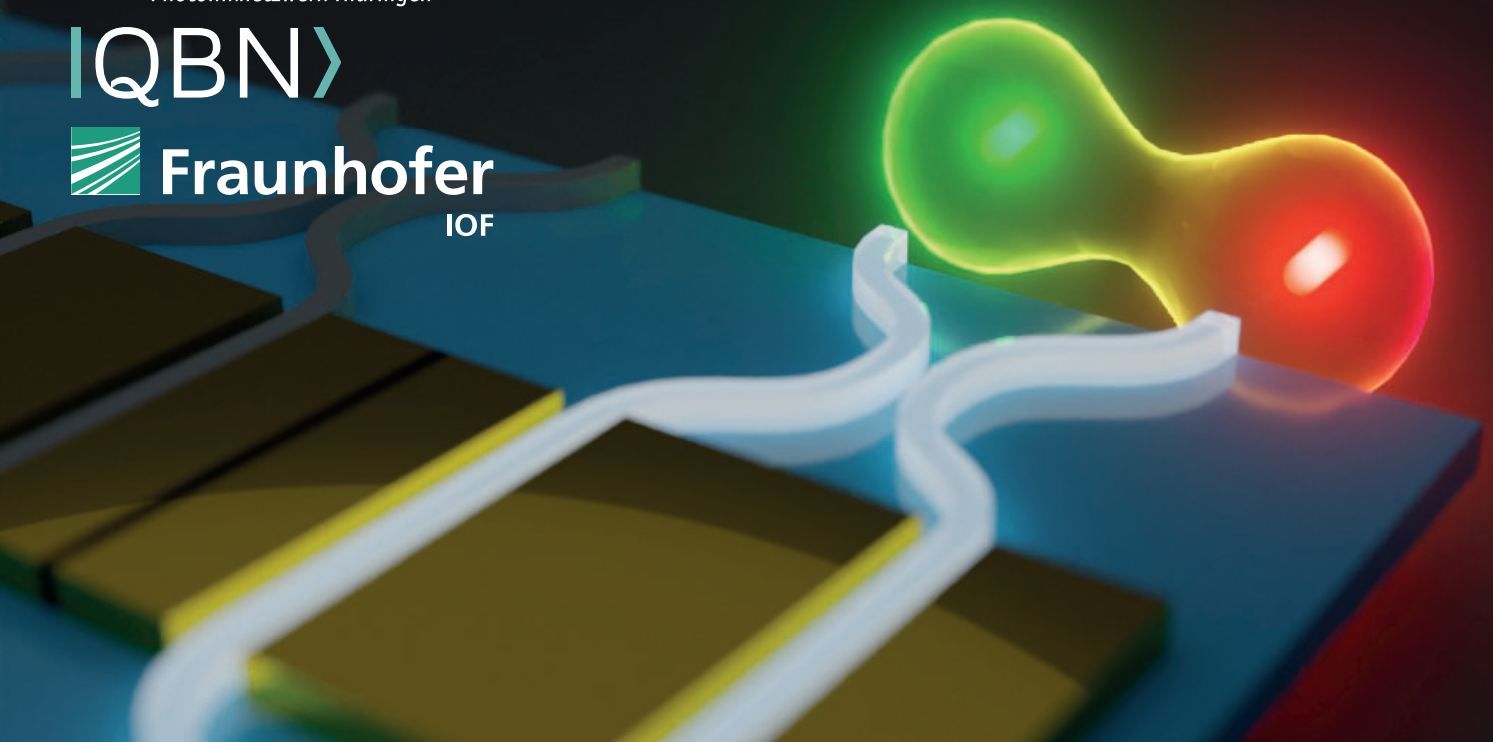
Access via Zoom Link

[uni-jena-de.zoom.us/j/69741772159](https://uni-jena-de.zoom.us/j/69741772159)

Meeting-ID: **697 4177 2159**

Password: **qp-tech**

- Free staff training to educate personnel in quantum technologies
- No prior knowledge about quantum mechanics required
- Soft introduction to the world of quantum physics
- Applications of optical quantum systems
- Quantum computing and communication



# Workshop Program

09:00

## Introduction

Thomas Pertsch  
University Jena

- Introductory words and presentation of qp-tech.edu

09:15

## Foundations of Quantum Optics

Lisa Wörner  
German Aerospace Center Ulm  
University Ulm

- Introduction to the basic principles of quantum mechanics with a glance at processes and internal mechanisms
- Assessing perspectives and limitations of the quantum revolution

10:15

## Quantum Communication

Christoph Marquardt  
University of Erlangen  
Nuremberg

- Transfer of fragile quantum states between different locations for the purpose of information processing
- Applications to quantum cryptography with a focus on long-term security

11:15

## Optical Quantum Computing

Falk Eilenberger  
Fraunhofer IOF

- Photons as experimentally well accessible and robust quantum objects that can be manipulated very precisely
- Modelling and optimization of their remarkably complex interference properties by quantum computers

12:15

## Lunch Break

13:00

## Quantum Computational Algorithms

Sevag Gharibian  
University Paderborn

- Algorithmic aspects of types of computational problems currently addressed by near-term quantum computers
- Typical approaches and their bottlenecks

14:00

## Quantum Sensing and Imaging

Frank Setzpfandt  
University Jena

- Extension of technically applicable spectral ranges and enhancement of the sensitivity of imaging and spectroscopy using quantum properties of light
- Physical principles and measurement methods

