Quantum Computing for Industry: From Vision to Application

Report of Contributions

https://indico.desy.de/e/47615

Contribution ID: **1** Type: **not specified**

Quantum Computing - A general introduction

This talk provides a foundational introduction to quantum computing, covering key concepts such as qubits, superposition, and entanglement. We will explore how quantum computing differs from classical approaches, highlighting its potential for tackling complex challenges in for example optimization, cryptography, and fundamental science.

The presentation will also provide a high-level overview of the current quantum computing landscape, including advancements in quantum hardware, software, and the growing ecosystem of technologies. This session is designed to offer a clear and accessible entry point for those new to quantum computing, as well as a framework for understanding its practical applications and future potential.

Presenter: TUCCI, Alice di (None)

Session Classification: Introduction

Contribution ID: **6** Type: **not specified**

Arrival

Monday 24 March 2025 12:30 (20 minutes)

Contribution ID: **7** Type: **not specified**

Welcome

Monday 24 March 2025 12:50 (10 minutes)

Presenter: BREHM, Enrico (CQTA (Centre f. Quantum Techno. a. Application))

Contribution ID: **8** Type: **not specified**

Quantum Computing - A general introduction (DESY)

Monday 24 March 2025 13:00 (45 minutes)

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Presenter: TUCCI, Alice di (Deutsches Elektronen-Synchrotron (DESY))

Contribution ID: **9** Type: **not specified**

Quantum Computing Ecosystem in Germany (DLR)

Monday 24 March 2025 13:45 (45 minutes)

DLR presents the German Quantum Computing ecosystem

Presenter: RANITZSCH, Philipp (DLR)

Contribution ID: **10** Type: **not specified**

Quantum Computing with Ion Traps (QUDORA)

Monday 24 March 2025 15:00 (20 minutes)

QUDORA presents their technology.

Presenter: BAUTISTA SALVADOR, Amado

Contribution ID: **11** Type: **not specified**

Diamond Quibits for Everyone: NV-Center Quantum Computing (XeeDQ)

Monday 24 March 2025 15:20 (20 minutes)

In this presentation, I will introduce quantum computing with diamond-based qubits, focusing on nitrogen-vacancy (NV) centers. NV-based quantum computers operate at room temperature and ambient pressure in compact, mobile devices, making them a cost-effective and accessible alternative to other platforms. I will discuss how our work at XeedQ aims to democratize quantum computing by making these systems available for research, education, and practical applications. Additionally, I will compare NV-based quantum computing with other state-of-the-art quantum computers and share our approach to scaling NV systems to larger qubit numbers.

Presenter: RICKERT, Julian (XeeDQ)

Contribution ID: **12** Type: **not specified**

IBM Quantum Roadmap (IBM Quantum)

Monday 24 March 2025 15:40 (20 minutes)

IBM Quantum presents their technology

Presenter: RADESCU, Voica Ana Maria (IBM Quantum)

Contribution ID: **13** Type: **not specified**

Quantum Technology Standardization –Latest Developments in Europe and Beyond (PTB)

Monday 24 March 2025 16:00 (20 minutes)

Presenter: GERSTER, Thomas (PTB)

Contribution ID: **14** Type: **not specified**

What does it mean to identify use cases for quantum computers? (HQS Quantum Simulation)

Monday 24 March 2025 16:40 (20 minutes)

Presenter: MARTHALER, Michael (HQS Quantum Simulation)

Contribution ID: **15** Type: **not specified**

The Thinq Qrisp Community –An Ecosystem for Quantum Developers (Fraunhofer Fokus)

Monday 24 March 2025 17:00 (20 minutes)

Fraunhofer Fokus presents their quantum software tools.

Presenter: BOCK, Sebastian (Fraunhofer Fokus)

Contribution ID: **16** Type: **not specified**

Unlocking the Potential of Quantum Computing: A Semiconductor Corporate (Infineon)

Monday 24 March 2025 17:20 (20 minutes)

Presenter: LUBER, Sebastian (Infineon)

Contribution ID: **17** Type: **not specified**

Closing remarks

Monday 24 March 2025 17:40 (10 minutes)

Presenter: BREHM, Enrico (CQTA (Centre f. Quantum Techno. a. Application))