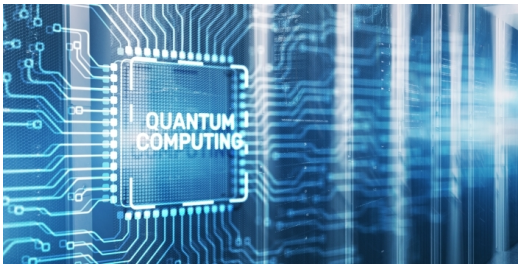
Quantum Algorithms in Pre-Fault Tolerant Hardware (BasQIBM25)



16.Jun - 20.Jun 2025

Cod. Z05-25

Mod.:
Face-to-face

Edition
2025

Activity type
Workshop

Date
16.Jun - 20.Jun 2025

Location
Miramar Palace

Languages
English

Academic Validity
50 hours

Web
https://basq-ibm-2025.dipc.org/

Organising Committee

Description

The field of quantum computing is on the brink of transformative advancements, driven by tangible progress in hardware development. As we enter the era of pre-fault-tolerant quantum devices, the potential for addressing complex quantum systems, once confined to theoretical realms, is becoming increasingly concrete. This conference aims to foster a collaborative environment where scientists from diverse backgrounds, including large-scale quantum experiments, classical approximation methods, and quantum algorithms, can come together to explore the implications of this hardware progress. By facilitating interdisciplinary discussions and knowledge sharing, we seek to identify critical challenges and opportunities in leveraging pre-fault tolerant quantum hardware to tackle complex problems in quantum physics, chemistry, materials science, and beyond.

ORGANIZING COMMITTEE:

- Geza Giedke (DIPC & Ikerbasque)
- Enrique Rico Ortega (CERN & UPV/EHU & Ikerbasque)
- Kristan Temme (IBM)

Objectives

This conference aims to foster a collaborative environment where scientists from diverse backgrounds, including large-scale quantum experiments, classical approximation methods, and quantum algorithms, can come together to explore the implications of this hardware progress.

By facilitating interdisciplinary discussions and knowledge sharing, we seek to identify critical challenges and opportunities in leveraging pre-fault tolerant quantum hardware to tackle complex problems in quantum physics, chemistry, materials science, and beyond.

Course specific contributors

BasQ Basque Quantum

IBM Quantum

EUSKO JAURLARITZA GOBIERNO VASCO

ZIENTZIA, UNIBERTSITATE ETA BERRIKUNTZA SAILA

DEPARTAMENTO DE CIENCIA, UNIVERSIDADES E INNOVACIÓN

Directed by

Enrique Rico Ortega

UPV/EHU - Ikerbasque

I have been working in the field of theoretical quantum physics in a broad scope of topics ranging from quantum link models and the preparation of exotic topological states in open systems to implementations of lattice gauge theories using ultra-cold atoms. I have made key contributions to a large number of projects and the ideas from my research with my collaborators have opened new directions to several timely topics in quantum physics in condensed matter, atomic-molecular-quantum optics physics, and beyond. To give an example, in my recent work on the quantum simulation of lattice gauge theories, with my collaborators, we have put forward a very exciting new approach to fundamental problems of high-energy physics. In 2015, I move to Bilbao with the highly competitive and prestigious Ikerbasque research fellow position. Nowadays, I have a permanent position at the UPV/EHU with an Ikerbasque research associate position.

Registration fees

REGISTRATION FEES	UNTIL 06-06-2025
Fee Waiver	0 EUR
Regular Attendant	400,00 EUR

Place

Miramar Palace

Pº de Miraconcha nº 48. Donostia / San Sebastián

Gipuzkoa