

The Summer School on Quantum Technologies is primarily oriented to Master and PhD Students. We aim to provide a vision of quantum technologies with focus on various platforms like superconducting circuits, trapped atoms and semiconductors, as well as an overview of applications in quantum computing, simulation and communication. The summer school's lecturers, with a unique combination of complementary backgrounds, will discuss the state-of-the-art in their respective fields as well as an outlook for the near- and long-term future. Students will also attend a practical session on quantum computing, as well as a round-table on the future of quantum technology.

Students should have a degree in Physics or a related subject. It is essential that students have a solid basis in Quantum Physics. Ideally students will also have some knowledge on Quantum Optics and Solid-State Physics. Students with a degree in Chemistry, Mathematics, or Engineering may also attend the school, as long as they have the required quantum physics background. The school may also be useful for post-docs or researchers seeking a first contact with the field of quantum technologies.

By the end of the school, students will have acquired a wide vision of the current state of quantum technologies which they can use as guide for their own research. They will also be able to understand the scientific challenges and professional opportunities in this exciting field.



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INFORMACIÓN GENERAL

Hasta el 14 de junio de 2019

Santander
Campus de Las Llamas
Avda. de los Castros, 42
39005 Santander
Tel. 942 29 87 00 / 942 29 87 10

Madrid
C/ Isaac Peral, 23
28040 Madrid
Tel. 91 592 06 31 / 91 592 06 33

A partir del 17 de junio de 2019

Santander
Palacio de la Magdalena
39005 Santander
Tel. 942 29 88 00 / 942 29 88 10

alumnos@uimp.es

Código 64BM / Tarifa: C / ECTS: 1

Organizado en colaboración con:



PLAZOS

Solicitud de becas

Hasta el día 27 de mayo,
para los cursos que comiencen
antes del 5 de julio de 2019

Hasta el día 14 de junio,
para los cursos que comiencen a
partir del 8 de julio de 2019

Apertura de matrícula

Desde el 6 de mayo de 2019
(plazas limitadas)

Horario general

de 9:00 a 14:00 h
de 16:00 a 18:00 h
(excepto viernes)

UIMP

Universidad Internacional
Menéndez Pelayo

SANTANDER 2019

SEMINARIO

Summer School
on Quantum
Technologies

Diego Porras

Del 17 al 21 de junio



700-19-002-3

www.uimp.es

SEMINARIO

Summer School on Quantum Technologies

Dirección

[Diego Porras](#)

Instituto de Física Fundamental, CSIC

Secretaría

[Ramón Aguado](#)

Instituto de Ciencia de Materiales de Madrid, CSIC

Del 17 al 21 de junio

Lunes 17

10:00 h | Opening

10:05 h | Introduction to quantum technologies and overview of the summer school.

[Diego Porras](#)

12:00 h | Principles of quantum computing. Examples of quantum algorithms and digital quantum computations

[José Ignacio Latorre](#)

Universitat de Barcelona

15:30 h | Quantum annealing with superconducting circuits

[Pol Forn Díaz](#)

IFAE/Barcelona Superconducting Center

Martes 18

09:30 h | Introduction to Majorana States and topological superconductivity: towards topological quantum computing

[Ramón Aguado](#)

12:00 h | Quantum computing for financial applications

[Román Orús Lacort](#)

Donostia International Physics Center

15:30 h | Practical session on IBM's cloud quantum computer

[Diego Porras](#)

Miércoles 19

09:30 h | Quantum computing with Silicon: Introduction

[María José Calderón Prieto](#)

Instituto de Ciencia de Materiales de Madrid, CSIC

12:00 h | Quantum Computing with Silicon qubits.

Recent experimental progress

[Silvano de Franceschi](#)

Researcher CEA Grenoble

15:30 h | Round Table

[Ramón Aguado](#)

[María José Calderón Prieto](#)

[Jonathan Home](#)

ETH Zurich

[Leo Kouwenhoven](#)

QuTech & Microsoft Delft

[Andreas Wallraff](#)

Moderación

[Diego Porras](#)

Jueves 20

09:30 h | Towards Topological Majorana Qubits: experimental status and outlook

[Leo Kouwenhoven](#)

12:00 h | Quantum Computation with Superconducting circuits. Introduction to superconducting circuit technology, recent experimental progress and outlook for applications

[Andreas Wallraff](#)

ETH Zurich

15:30 h | Introduction to the principles of quantum cryptography. Recent experimental progress and current opportunities

[Verónica Fernández Mármol](#)

ITEFI-CESIC

Viernes 21

09:30 h | Quantum computing with trapped ions: challenges and outlook for applications

[Jonathan Home](#)

12:00 h | Quantum simulation with ultracold atoms

[Anna Sanpera](#)

Universidad Autónoma de Barcelona

13:30 h | Closing