Quantum Designer Physics (QDP2024)

15.Jul - 19.Jul 2024

Cod. Z15-24

Mod.:
Face-to-face

Edition
2024

Activity type
Workshop

Date
15.Jul - 19.Jul 2024

Location
Miramar Palace

Languages
English

Academic Validity
50 hours

Web
https://qdp2024.dipc.org

Organising Committee

Description

The workshop will highlight recent advances in material systems designed for studying the most intriguing physical phenomena at the nanoscale. These phenomena are related to spin, topology, and coherence, which make it possible for the materials to display quantum functionalities. While Condensed Matter Physics is rich in material systems in which almost any physics can be readily found and studied, with recent developments of quantum materials, it appears possible to purposefully design material systems with a given physical phenomenon in mind. Thus, a 'toy model' which could be conceived to exhibit an interesting behavior can be implemented in quantum materials and used for basic research or applications.

This workshop brings together the leading experts working on quantum materials and aims at creating a stimulating atmosphere for discussing new physics on the marvelous sites of San Sebastian. We will discuss recent progress in creating ordinary and topological quantum systems in different dimensions, as well as some of the most exotic quantum materials based on graphene and other low dimensional materials. We will update on the progress in spin-based quantum computing with an outlook into the prominent future of quantum technologies. The quest for topologically non-trivial states in hybrid superconducting systems as well as topological quantum computing are also on our agenda. We hope the workshop will foster collaborations and inspire its attendants to tackle new problems with great ideas which make a difference for fundamental physics, lead to applications, and advance quantum technologies.

ORGANIZING COMMITTEE:
Daniel Loss (University of Basel)
Francisco Guinea (IMDEA Nanoscience, DIPC, Ikerbasque)
Vitaly Golovach (CFM-UPV/EHU, DIPC, Ikerbasque)

Objectives

To bring together leading experts working on the frontiers of the design of advanced materials with quantum functionalities.

To present and discuss the recent developments in the field and determine directions of future research.

To facilitate the discussion and foster collaborations between theoretical and experimental physicists, including local scientists from Donostia.

To create the conditions for young and brilliant scientists to present their work and make themselves visible in this rapidly developing field.

Course specific contributors

Donostia International Physics Center

EUSKO JAURLARITZA
GOBIERNO VASCO
HEZKUNTZA SAILA
DEPARTAMENTO DE EDUCACIÓN

Directed by

Vitaly Golovach

Materialen Fisika Zentroa CFM-UPV/EHU and Donostia International Physics Center, Ikerbasque Research Fellow

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Registration fees

REGISTRATION FEES	UNTIL 07-07-2024
Fee Waiver	0 EUR
Regular Attendant	450,00 EUR

Place

Miramar Palace

Pº de Miraconcha nº 48. Donostia / San Sebastián

Gipuzkoa