



Quantum Designer Physics (QDP2024)



15.Juil - 19.Juil 2024

Cod. Z15-24

Modalité:

En personne

Édition

2024

Type d'activité

Workshop

Date

15.Juil - 19.Juil 2024

Location

Miramar Palace

Langues

Anglais

Reconnaissance officielle par l'État

50 heures

Comité d'organisation



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)

Objectifs

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.

Collaborateurs spécifiques au cours



HEZKUNTZA SAILA
DEPARTAMENTO DE EDUCACIÓN

Directed by



Vitaly Golovach

Materialen Fisika Zentroa CFM-UPV/EHU and Donostia International Physics Center

Professeurs



Shaffique Adam

National University of Singapore



Yoichi Ando

University of Cologne



Christian Back Back



Sebastian Bergeret



Andrei Bernevig



Stefano Bosco Bosco

QuTech



Sara Catalano

Material Physics Centre



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CEA



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CNRS, Institut Polytechnique de Paris



Jérôme Faist

ETH Zurich



Leonid Glazman Glazman

Yale University



Shahal Ilani

Weizmann Institute



Jelena Klinovaja

University of Basel



Roza Kotlyar

Stardust Materials



Leo Kouwenhoven



Henry Legg

Uni Basel



Liang Fu Liang Fu

Massachusetts Institute of Technology



Roman Lutchyn

Microsoft



Allan MacDonald

University of Texas at Austin



Vladimir Manucharyan

EPFL



Pierre Anthony Pantaleon Peralta



Stuart Parkin

MPI of Microstructure Physics



Jane Park

Massachusetts Institute of Technology



José Ignacio Pascual

CIC nanoGUNE

Nacho Pascual obtained a PhD in Physical Sciences in 1998 from the Universidad Autónoma de Madrid, Department of Condensed Matter Physics. His studies about quantum electronic transport through atoms and molecules using scanning tunnelling microscopy contributed to the settlement of a new research field in nanoelectronics. In 1999, he moved to Berlin, to the Fritz-Haber Institute der Max-Planck Gessellschaft, hosting there a Marie Curie Fellowship to investigate the rules behind single-molecule vibrational spectroscopy, a newly developed method to characterize chemically absorbates with STM. After a short stay in Barcelona, at the Institut de Ciencia de Materiales (ICMAB-CSIC), hosting a Ramon y Cajal Fellowship, he moved back to Berlin, now to the Freie Universität, first (2004)

as a Junior Professor and posteriorly (2008) as full Professor. There, he expanded his research in the field of Molecular Physics at Surfaces, dealing with various molecular-scale phenomena, from molecular switching behaviour and charge transfer processes, to magnetism and superconductivity. In 2012, he joined nanoGUNE as Ikerbasque Research Professor and Group Leader of the Nanoimaging group. <https://www.nanogune.eu/en/nanogune/people/n>



Elsa Prada Núñez



Patrik Recher

TU Braunschweig



PASCAL SIMON SIMON

University Paris Saclay



Andrew Sterne



Dominik Zumbuehl

University of Basel

Tarifs inscription

REGISTRATION FEES

JUSQU'AU 08-07-2024

Fee Waiver	0 EUR
Regular Attendant	450,00 EUR

Lieu

Miramar Palace

Pº de Miraconcha nº 48. Donostia / San Sebastián

Gipuzkoa