

THE CAMPUS OF THE UAM AT CANTOBLANCO

Nanoscience and nanotechnology

Centers and facilities

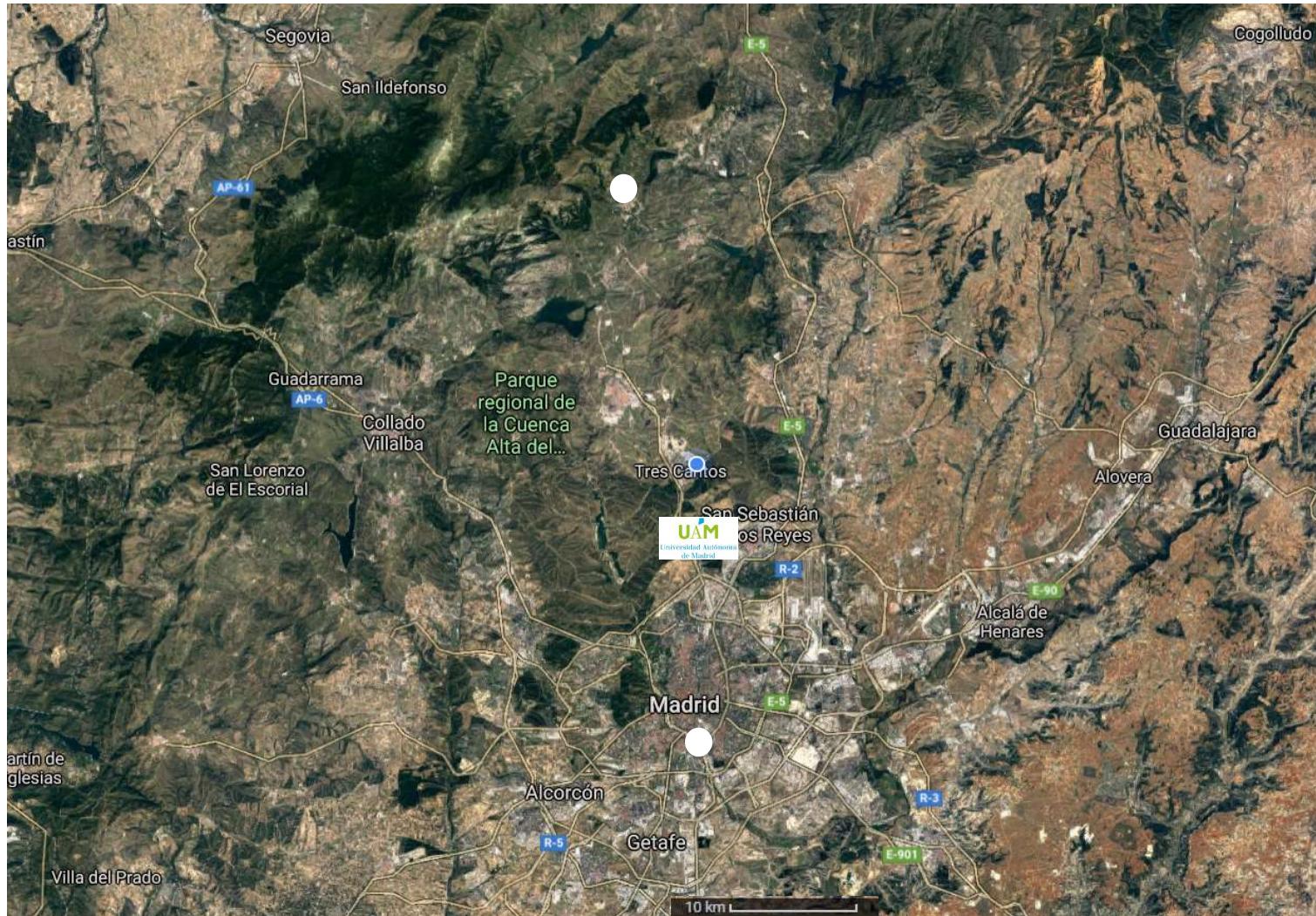


CONSEJO SUPERIOR DE INVESTIGACIONES CIENTÍFICAS



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mountains + city



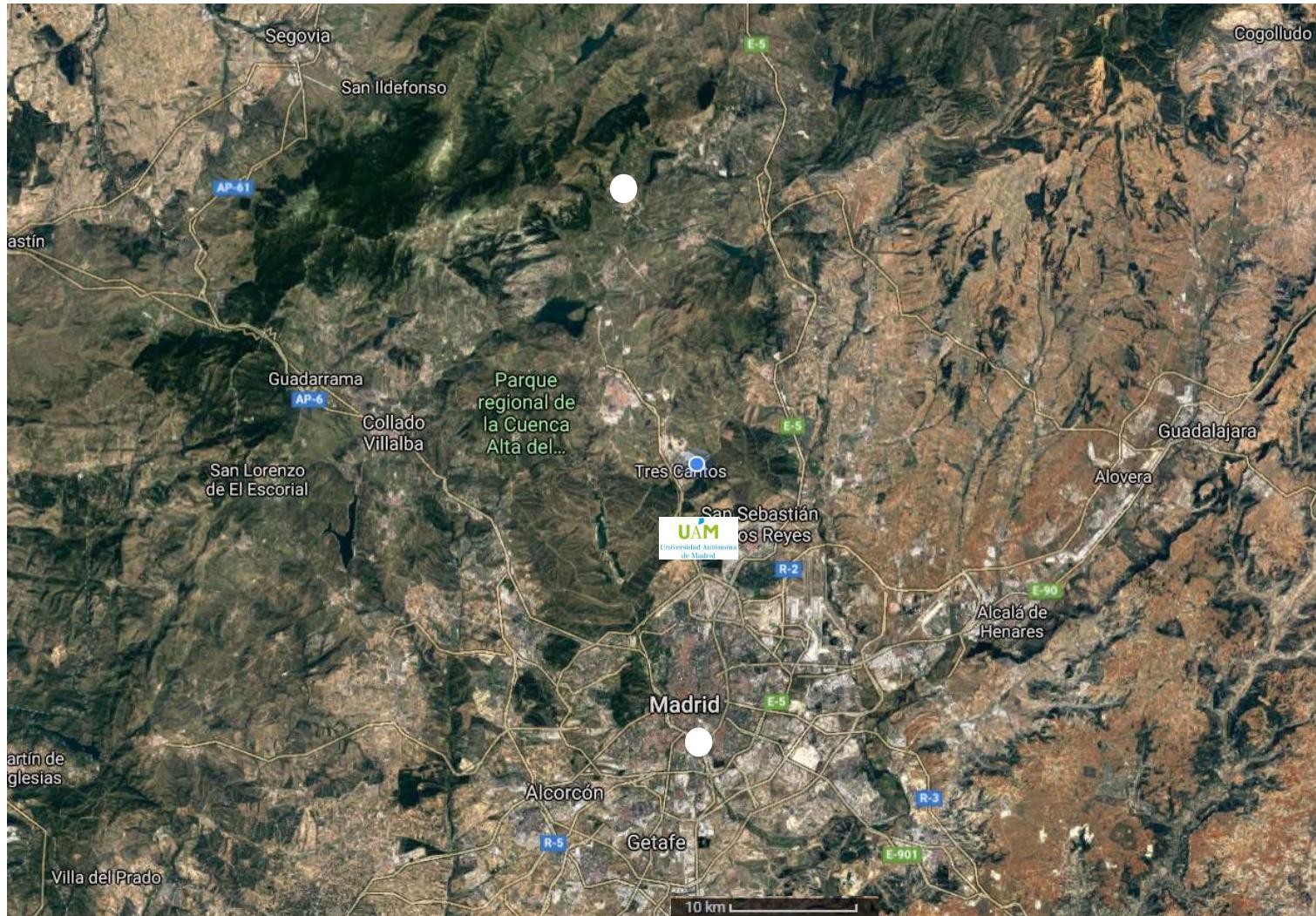
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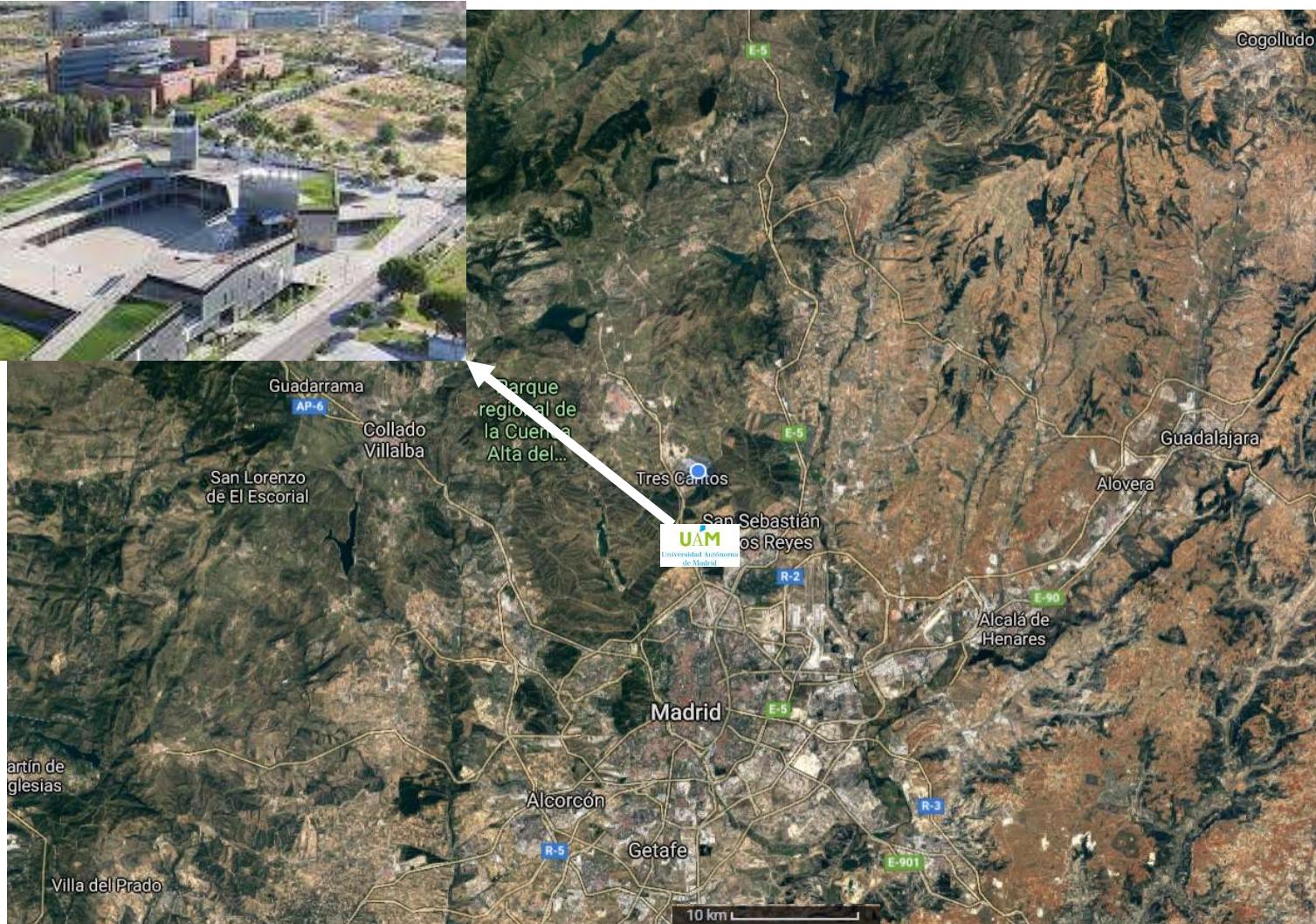
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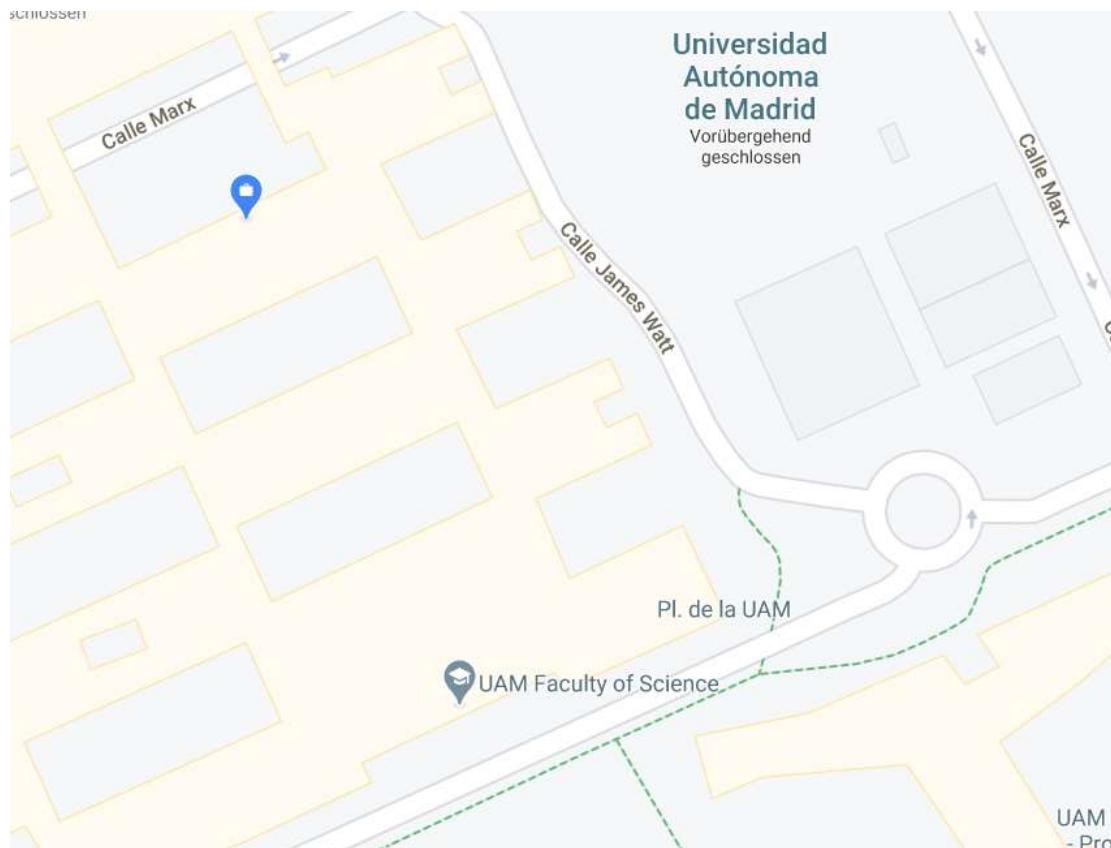
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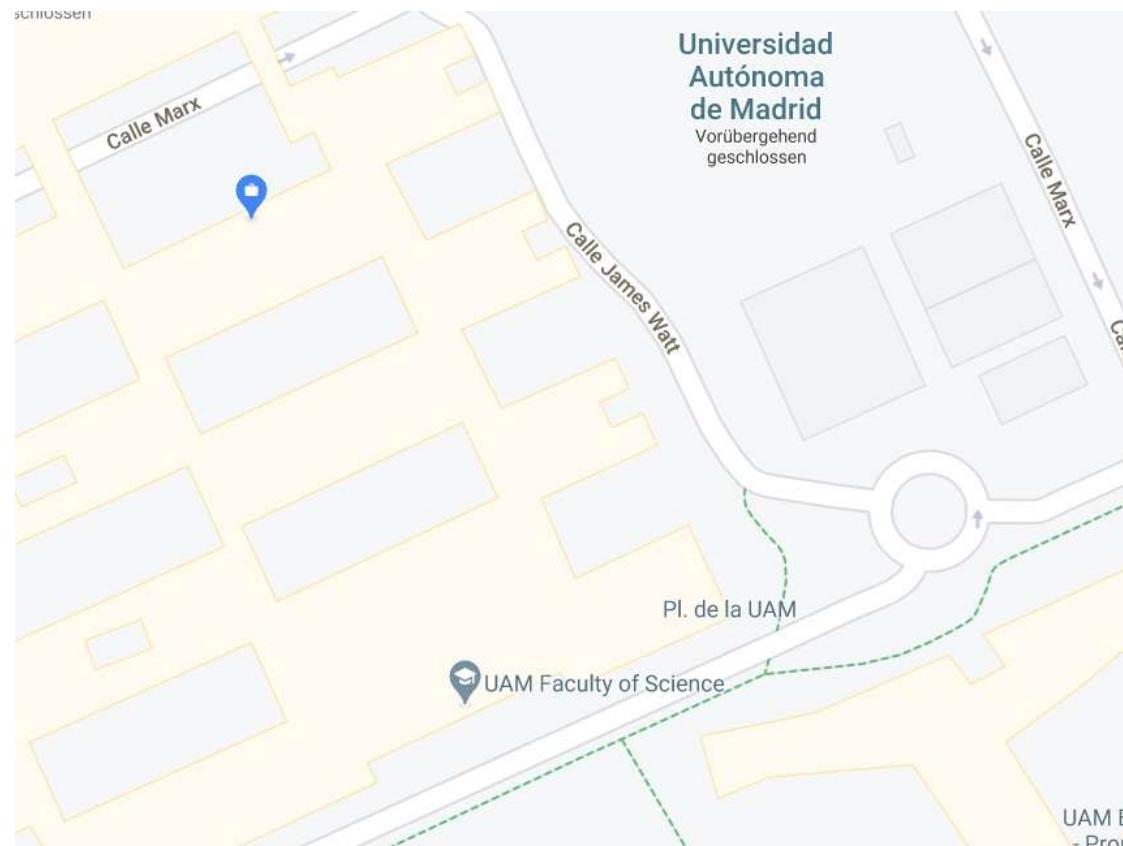
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**Graphene, low dimensional nanostructures,
ARPES, LEED, charge density waves, quantum
transport superconducting hybrid structures,
strong correlations**

**UHV, Low Temperatures (6 dilution
refrigerators), Optics (fs)**

SPM



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Condensed Matter Physics Center

MARÍA DE MAEZTU
Excellence Research Center

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Advanced Materials First Principles Simulations and Modeling Nanophysics Nano and Quantum Optics Soft Matter and Biophysics

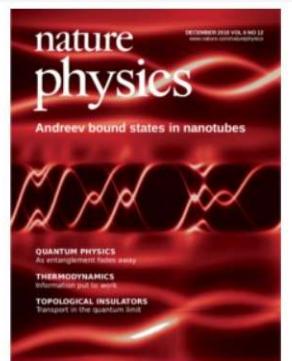
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Overview

Some of our main activities in the field of Nanophysics are related to the theoretical and experimental study of novel low-dimensional systems such as graphene and graphene-based nanostructures. Making use of experimental techniques such as Angle Resolved Photoemission Spectroscopy (ARPES) or Low Energy Electron Diffraction (LEED), IFIMAC researchers also investigate topics like 2D structural phase transitions, surface charge density waves, or the electronic structure of laterally nanostructured systems. Furthermore, we study the growth and properties of nanometer-scale objects on solid surfaces with applications in spintronics, optoelectronics, magnetic recording, nanoscale catalysis, nanomechanical biosensing, medical nanoimaging, etc.



nanostructures. From a theoretical point of view, IFIMAC researchers are among the worldwide leaders in the area of ab initio modeling of nanowires and SPMs.



Other important areas of expertise in our center are the fields of Nanoelectronics and Quantum Transport. In particular, in recent years researchers at IFIMAC have played a leading role in the understanding of the electronic transport in a great variety of nanoscale systems such as metallic atomic-size contacts, single-molecule junctions, superconducting hybrid structures, or strongly correlated low-dimensional systems.

A very important topic in our center is also the use and modeling of Scanning Probe Microscopes (SPMs). Thus for instance, from an experimental point of view, Atomic Force Microscopy (AFM) is being currently used for instrumentation, physical virology, and for the study of mechanical and electrical properties of low-dimensional materials. Another key subject is the use of cryogenic Scanning Tunneling Microscopy (STM) for the surface characterization of semiconductor and superconductor

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SPM

Museo
Nacional de
Ciencia y
Tecnología
J. Gómez



1024 x 1402



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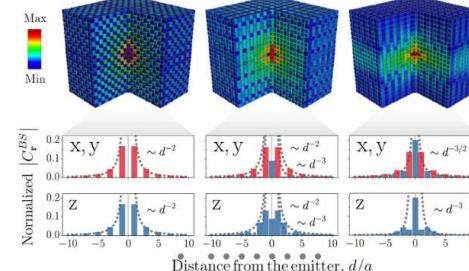
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Advanced Materials First Principles Simulations and Modeling Nanophysics Nano and Quantum Optics Soft Matter and Biophysics

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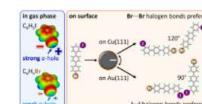
Featured on Research Highlights

Tunable and Robust Long-Range Coherent Interactions between Quantum Emitters Mediated by Weyl Bound States

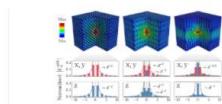


ARTICLES | NOVEMBER 17, 2020 | 63

What's New



coherent-interactions-between-quantum-emitter...



Tunable and Robust

IFIMAC Seminars

Superspintronics –
Towards Ultra-low
Dissipation Spin-
electronics

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Quantum Simulation

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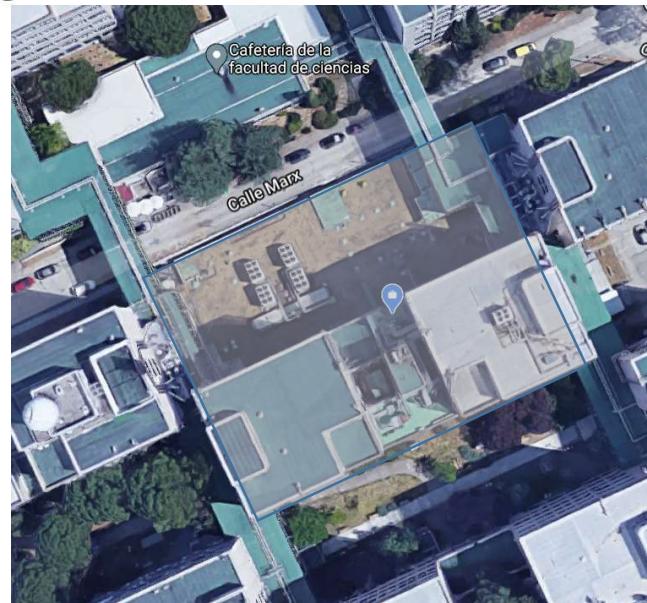


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...

QUAMaterials



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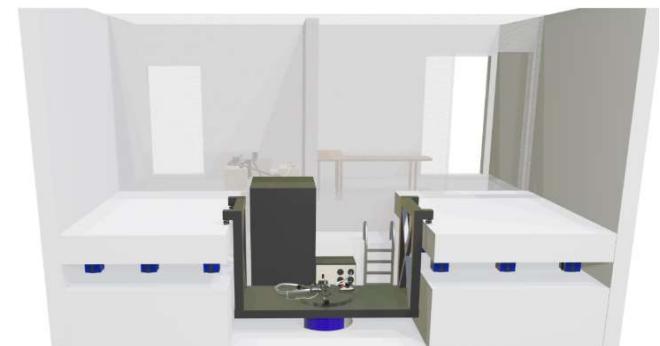
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Research areas:

- Advanced Materials
- First Principles Simulations and Modeling
- Nanophysics
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- Soft Matter and Biophysics

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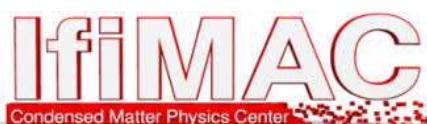
22 Tesla magnetic fields
Isabel Guillamón
Connection to EU
infrastructures emfl.eu

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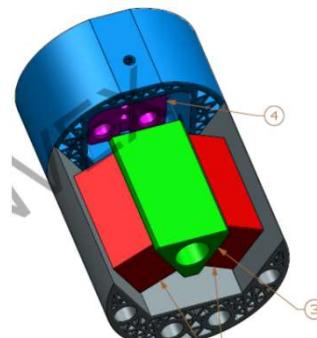
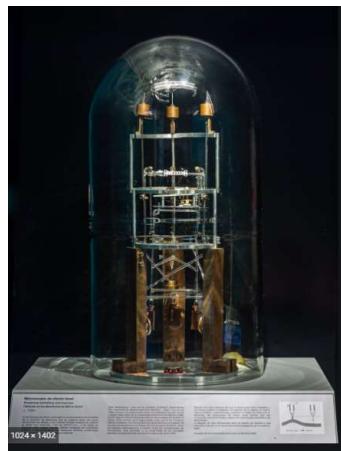


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Instituto Universitario de Ciencia de Materiales Nicolás Cabrera

UAM Universidad Autónoma de Madrid

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Poster Summer School 2019

XXIV INTERNATIONAL Summer School "Nicolás Cabrera"
Driving the road towards room temperature superconductivity with electronic interactions
Sept. 9-10-2010 Miraflores de la Sierra Madrid Spain

HTc

Quiero ser Científica. Un análisis de los sesgos de género en ciencia

News

04 Isabel Guillamón awarded with the "Miguel Catalán" 2020 Award

Publications

$x (\mu\text{m})$ $k_x (\mu\text{m}^{-1})$

Summer School 2020: Physics of Biological Systems: From Emergent Collective behaviors to Functional Materials

24 February, 2020 News

XXVII International Summer School 'Nicolás Cabrera'

Physics of Biological Systems: From Emergent Collective behaviors to Functional Materials

Miraflores de la Sierra, Madrid, Sept. 4-8, 2017

Quantum Transport in Topological Materials
XXIV International Summer School 'Nicolás Cabrera'
September 4-8, 2017
Miraflores de la Sierra

With the collaboration of

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Electrónica Instrumentación Desarrollos Cuarzo Equipos
Vidrio U.A.M. Criogenia

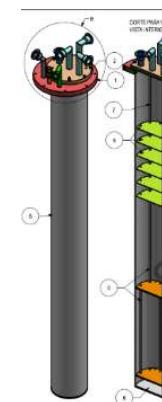
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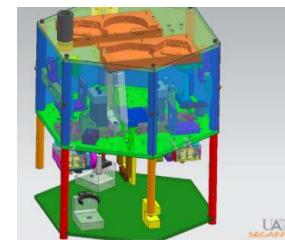
Home-built



Liquid Helium production and recovery 50 000 liters/year.
Delivery of liquid Helium to Hospitals during shut-down

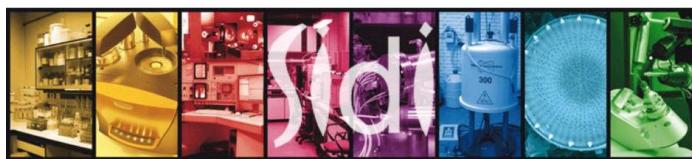


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Unidades de Análisis	Zona de Autoservicio	Unidad de Microscopía
Unidad de Análisis Elemental	Servicio de Espectrometría de Fluorescencia	Laboratorio de Microscopía de Barrido y Análisis por Energía Dispersiva de Rayos X La Microscopía Electrónica de Barrido (SEM, del inglés Scanning Electron Microscopy) agrupa un conjunto de técnicas que permiten la caracterización morfológica, estructural y de composición de superficies sólidas mediante imágenes con diferente grado de resolución.
Unidad de Análisis Térmico	Servicio de cromatografía de gases, Varian 3900 GC	Laboratorio de Microscopía Electrónica de Barrido de Emisión de Campo El microscopio electrónico de barrido de emisión de campo permite la observación y caracterización con muy alta resolución de la superficie de materiales. También es utilizado para la obtención de patrones Nanolitográficos.
Unidad de Citometría de Flujo	Laboratorio de Resonancia Magnética Nuclear "Jesús H. Rodríguez Ramos"	Laboratorio de Microscopía Confocal La Microscopía Confocal permite el estudio de muestras con marcaje fluorescente, haciendo secciones ópticas de las mismas y posibilitando su reconstrucción tridimensional.
Unidad de Cromatografía	Servicio de consulta de bases de datos cristalográficas	Laboratorio de Microscopía Electrónica de Transmisión El microscopio electrónico de transmisión permite el estudio a nivel de la ultraestructura de los componentes celulares y tejidos (tanto animales como vegetales). La utilización de anticuerpos y reactivos inmunotocíquicos, aporta además información funcional sobre el material sujeto a estudio. Permite también la caracterización morfológica de materiales de forma directa, así como su composición mediante técnicas espectroscópicas asociadas.
Unidad de Espectrometría de Masas	Servicio de producción de agua ultrapura	Tratamiento digital de imagen científica - Laboratorio de Microscopía Confocal El tratamiento digital de la imagen científica permite procesar y analizar estas imágenes para obtener resultados con calidad suficiente para su publicación y extraer datos numéricos relevantes para su manejo e interpretación.
Unidad de Espectroscopía Molecular	Servicio de balanzas de precisión	

CMAM CENTRO DE MICRO-ANÁLISIS DE MATERIALES

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Accelerator hall view

Call for beamtime proposals:
The next user proposal deadline is **22-01-2021**
[More information ...](#)

BEAMTIME REQUEST SERVICE
To submit beamtime applications, please click here.

<https://www.cmam.uam.es/>

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IMDEA: Instituto Madrileño de Estudios Avanzados



<https://www.nanociencia.imdea.org//>



Noticias

Colocada la primera piedra de la sede definitiva del Instituto Madrileño de Estudios Avanzados IMDEA-Nanociencia

14/01/2010

IMDEA Nanociencia is a non-profit Foundation created on November 23rd 2006 by initiative of the regional Government of the Community of Madrid in November 2006 in order to provide new capacity for research, technological development and innovation in the field of Nanoscience, Nanotechnology and Molecular Design.

IMDEA Nanociencia Institute as a new interdisciplinary research Centre is dedicated to the exploration of basic nanoscience and the development of applications of nanotechnology in connection with innovative industries. The IMDEA Nanociencia Institute is part of one of the strategic lines of the Campus of International Excellence (CEI) UAM+CSIC.

The node of IMDEA Nano brings up together people working on different fields all related with the nanoscience, as nanomagnetism, synthesis of magnetic nanoparticles, nanomagnetics for biomedical and technological applications, metallodrugs and nanobiotechnology.



IMDEA Nanociencia is a non-profit Foundation created on November 23rd 2006 by initiative of the regional Government of the Community of Madrid in November 2006 in order to shorten the distance between the research and society in the Madrid region and provide new capacity for research, technological development and innovation in the field of Nanoscience, Nanotechnology and Molecular Design. In 2007 the former Ministry of Education and Science of the Government of Spain decided to also fund part of the creation and equipment of an Institute of Nanoscience in the Community of Madrid.

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<https://www.nanociencia.imdea.org//>

nanoscience and nanotechnology: small is different

Home / Research / Research programs

Research Programs

- Molecular nanoscience and chemical synthesis
- Scanning probe microscopies and surfaces
- Nanomagnetism
- Nanoscience for critical raw materials
- Nanostructured functional surfaces
- time-resolved optical spectroscopy
- Transport in 2D systems
- Nanobiosystems
- Nanomedicine
- Quantum nanodevices



The website features a banner with the text "nanoscience and nanotechnology: small is different". The header includes the IMDEA Nanociencia logo, a search bar, and links for Research, Partnerships, Careers, Services, and Transparency. A sidebar on the right shows a "Tweets" feed from @IMDEA_Nano.

Tweets by @IMDEA_Nano

IMDEA Nanociencia Retweeted
IMDEA Nanociencia (@IMDEA_Nano)
On 2011 we launched the Early Stage Researchers Workshop #ESRW. Since then, the workshop has been celebrated each year bringing together young scientists working on Nanoscience. Do not miss this 10th edition, a special one happening online.
Register now at nanociencia.imdea.org/home-en/workshop

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<https://www.nanociencia.imdea.org//>



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Centre for Micro and
Nanofabrication



Daniel Granados



Users at UAM: Eduardo Lee

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CSIC: *Instituto de Ciencia de Materiales*



Español | Intranet



<https://www.icmm.csic.es/>

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> Quantum Materials and technologies

Ferroic materials and Spin Phenomena

2D Materials and Van der Waals heterostructures

Nanostructures and surfaces

Research Projects FEDER

Research Projects ERC

Materials Science Factory

Technological offer and patents

Quantum Materials and technologies

Materials for Emerging Technologies

This research line focuses in materials in which quantum physics leads to emergent phenomena, such as superconductivity or topological phases, and to applications in quantum computing. The involved groups expertise ranges from techniques in many body theory, quantum optics, quantum transport and simulation of materials to the preparation and experimental characterization of structural, electronic and optoelectronic materials and devices.

Research Groups Involved:

- 2D Foundry
- Field Theories in Condensed Matter Physics
- Novel Platforms and Nano-devices for Quantum Simulation and Computation
- Heterostructures for Optics and optoelectronics

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NOVEL PLATFORMS AND NANO-DEVICES FOR QUANTUM SIMULATION AND COMPUTATION

Instituto de Ciencia de Materiales de Madrid (ICMM-CSIC)

Our people

This is us!



2D Foundry research group

Materials for Emerging Technologies research group

Research Group in Condensed Matter Physics

System with complementary approaches



Garcia-Hernandez Lab

Magnet & magnetoresistive



Castellanos-Gomez Lab

2D Materials & devices



Munera Lab

Ferroic materials



Frienda Lab

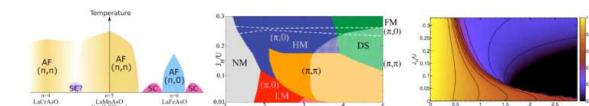
Magnetic transport



Consejo Superior de Investigaciones Científicas



Instituto de Ciencia de Materiales de Madrid



Theory of Quantum Materials and Solid State Quantum Technologies

Instituto de Ciencia de Materiales de Madrid, CSIC

RAMON ALMENDRO

ENRIQUE BERNAL

LUIS BRIET

MARIA JESUS CALDeron

LEONOR CHEC

ELVIRIA GARCIA

PABLO GARCIA-JOSE



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What can we expect from CIVIS ?

- *Networking tool. No money for research*
- *Linus Pauling:*
“The way to get good ideas is to get lots of ideas, and throw the bad ones away”



Action networking tools

Home > COST Actions > Action Networking Tools

Researchers joining COST Actions are able to benefit from a wide range of COST networking tools. More information about the tools and the benefits of taking part can be found below.

For full eligibility criteria please check the Vademecum, which is available at the side of the page for download.

Related links:

Documents and guidelines

Short-term scientific missions

Short-term scientific missions (STSM) are exchange visits between researchers involved in a COST Action, allowing scientists to visit an institution or laboratory in another COST Member state. These scientific missions may last up to six months in another COST Member/Cooperating Member or Non-Member Country outside the Action. Their aim is to foster collaboration in excellent research infrastructures and share new techniques that may not be available in a participant's home institution or laboratory.

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YouTube



<https://www.cost.eu/cost-actions/cost-actions-networking-tools/>



School on quantum materials and workshop on vortex behavior in unconventional superconductors, 7-12 October, 2018



Joint workshop between MOLSPIN and NANOCOHYBRI – Superconductivity meets Molecular Spins – 20-22 March 2019



Superconducting Hybrids @ Extreme – Tatry (Slovakia)
Meeting postponed to Spring 2021



Probing Coherent Superconducting Hybrids at the Nanoscale, 17-20 February 2019



International Workshop on Vortex Matter 2019 – Antwerp (Belgium), May 20-25

nanocohybri.eu

CMD2020GEFES, éxito online

L a semana del 31 de agosto al 4 de septiembre se ha celebrado el congreso CMD2020GEFES (cmd2020gefes.eu), la reunión europea de física de la materia condensada. Ha sido organizada por el GEFES y la División de Materia Condensada de la Sociedad Europea de Física (CMD-EPS) con el centro local en la Universidad Autónoma de Madrid, donde originalmente estaba planeado celebrarla presencialmente. Debido a las circunstancias excepcionales

