

PARTICIPATION IN CONFERENCES AND MEETINGS

Invited talks in meetings.

63. 12th International Conference on Materials and Mechanisms of Superconductivity. Beijing. August 2018, *Scanning probe microscopy of vortices in tilted magnetic fields.*
62. Synthesis and exotic physics of novel quantum materials. Ames. August 2018. *Electronic interference observed by very low temperature scanning tunneling microscopy.*
61. A.A. Abrikosov memorial conference. Moscow. June 2018.
Bound states of vortices and magnetic impurities in superconductors.
60. Workshop "New platforms for topological superconductivity with magnetic atoms". Dresden. April 2018.
Bound states and unconventional low energy electronic behavior in superconductors.
59. Vortex X. Rhodes. September 2017.
Biaxial strain induces phase separation in $\text{Ca}(\text{FeCo})_2\text{As}_2$
58. 16th international workshop on vortex matter. Natal. May 2017.
Scanning tunneling microscopy of vortices in tilted fields.
57. XVII Encuentro de Superficies y Materiales Nanoestructurados. Bariloche. May 2017.
Microscopía de efecto túnel a muy bajas temperaturas.
56. March meeting. Nueva Orleans. March 2017.
Visualizing the vortex lattice in two-effective-band, stoichiometric high Tc $\text{CaKFe}_4\text{As}_4$ superconductor.
55. Nanoconfined superconductors and their applications. Garmisch-Partenkirchen. September 2016.
Vortex core size from low temperature scanning tunneling microscopy.
54. Interference of magnetism and superconductivity. Natal. Institute of Physics. July 2016.
Interplay between structural domains, magnetic and superconductivity from low temperature scanning tunneling microscopy.
53. 3rd Toyota Riken International Workshop on vortex matter. Nagoya. May 2016.
Vortex core size from very low temperature scanning tunneling microscopy in one and two gap superconductors.
52. Workshop on nanoscale imaging of superconductivity. Sas Fee. April 2016.
Anisotropy and size of the superconducting vortex core.
51. 9th European School on Molecular Nanomagnetism. May 2016.
Correlations and superconductivity in 2D.
50. Bad Honnef, Germany. WE Heraeus seminar Frontiers in Scanning Probe Microscopy. November 2015.
Scanning tunneling microscopy in strongly correlated electron systems.
49. Rhodes, Greece. International conference on vortex matter in nanostructured superconductors. September 2015.
Scanning tunneling microscopy and spectroscopy in strongly correlated electron systems.
48. Moscow, Russia. Landau Institute. International workshop on localization, interactions and superconductivity. June 2015.
Scanning tunneling spectroscopy of two-dimensional superconductors at very low temperatures.
47. Iguazu, Brazil. Brazilian Physical Society Meeting 2015. May 2015.
Multiband Fermi surface, anisotropic gap structure and tilted vortices in layered superconductors.
46. Naples, Italy. Physics and applications of superconducting hybrid nanoengineered devices. September 2014.
Tilted vortex cores and the Fermi surface anisotropies.
45. Paris, France. Condensed Matter in Paris 2014, JMC 14 CMD 25. August 2014.
Semi-plenary talk. Scanning tunneling microscopy and spectroscopy in superconductors at very low temperatures
44. Buenos Aires, Argentina. International Conference in Low Temperature Physics, LT27. August 2014.
Semi-plenary talk. Very low temperature scanning tunneling microscopy observation of the 2D vortex order-disorder transition.
43. Stuttgart, Germany. International School of the IMPRS for Condensed Matter Science. Superconductivity and magnetism at the nanoscale. July 2014.
Superconductivity and magnetism in tilted magnetic fields viewed with scanning tunneling microscopy
42. Bordeaux, France. Interplay between magnetism and superconductivity. April 2014.
On the tilted vortex lattice.
41. Villard de Lans, France. Workshop on the superconductor to insulator transition. February 2014.
Disorder and Coulomb interactions in quasi two dimensional superconductors
40. Tokyo, Japan. International Superconductivity Symposium ISS2013. November 2013.
Very low temperature scanning tunneling spectroscopy in superconductors
39. Zakopane, Poland. XVI National Conference of superconductivity. October 2013.
Scanning tunneling spectroscopy at very low temperatures in 2D crystals and in disordered thin films
38. Rhodes, Greece. VIII Vortex Summer School. October 2013.
Keynote talk. Vortex lattice visualization using scanning tunneling spectroscopy at very low temperatures
37. Kosice, Slovakia. 15th Czech and Slovak conference on magnetism. June 2013.
Scanning tunneling spectroscopy at very low temperatures
36. Bordeaux, France. Modern trends in theory of quantum phase transitions. May 2013.
Scanning tunneling spectroscopy at very low temperatures in vortex lattices
35. Nanjing, China. 14th international workshop on vortex matter in superconductors. May 2013.
Scanning tunneling spectroscopy at very low temperatures in 2D crystals and in disordered thin films
34. Plannersalm, Austria. Workshop on high temperature superconductors. February 2013.
Superconducting thin films and single layers studied by STM
33. Argonne, USA. Workshop on unconventional insulators. November 2012.
Scanning tunneling conductance at very low temperatures in superconducting and insulating phases of ultra thin TiN films
32. Washington, USA. M2S 2012. August 2012.

- Scanning tunneling microscopy of the vortex lattice*
31. Madrid, España. CYTEF 2012. February 2012.
- Laboratorio de muy bajas temperaturas: cerca del cero absoluto*
30. Peñíscola, España. ESMOLNA 2011 (specialized lecture). October 2011.
- Scanning tunneling microscopy at very low temperatures*
29. Prague, República Checa. 23rd International congress of refrigeration. August 2011.
- Cryogenic scanning probe microscopy. Atomic scale precision in a cryogenic environment*
28. Bath, Reino Unido. Mayo 2011. Mesoscopic superconductivity and vortex imaging.
- Very low temperature scanning tunneling spectroscopy of the vortex lattice: order-disorder transition.*
27. Tarragona, España. Fuerzas y Túnel 2010. Septiembre 2010.
- Scanning tunneling spectroscopy of the vortex lattice.*
26. Paris, Francia. On the heavy fermion road. Septiembre 2010.
- Scanning tunneling spectroscopy in heavy fermion superconductors.*
25. Beijing, China. International Vacuum Congress. Agosto 2010.
- Scanning tunneling spectroscopy in superconductors at very low temperatures.*
24. Lanzarote, España. New generation of strongly correlated electron systems. Junio 2010.
- Scanning tunneling spectroscopy in strongly correlated electron systems.*
23. Kanpur, India. Interaction, instability, transport and kinetics: glassiness and jamming. Febrero 2010.
- Direct observation of thermally activated processes in 2D vortex lattice using STM: depinning and melting*
22. Krakow, Poland. Emergent behavior in correlated systems. September 2009.
- STM in superconductors at very low temperatures.*
21. Rhodes, Greece. Vortex matter in nanostructured superconductors. September 2009.
- Scanning tunneling microscopy imaging of the vortex lattice.*
20. First European School on Molecular Nanoscience. October 2008.
- Superconductivity studied by scanning tunneling spectroscopy at very low temperatures.*
19. Ciclo de conferencias conmemorativas del centenario del helio líquido. Real Academia Sevillana de las Ciencias. Noviembre de 2008.
- Observación directa de fenómenos cuánticos macroscópicos en helio líquido*
18. New materials, new techniques and new ideas in strongly correlated electron systems. Julio de 2008.
- Interplay between superconductivity and charge order in the transition metal dichalcogenides*
17. IV International Workshop on Nanomagnetism. Julio 2008.
- Nanoscale superconducting properties of amorphous W-based deposits grown with focused-ion-beam.*
16. Probing superconductivity the Nanoscale. Alicante. June 2008.
- Superconductivity and charge order: Intrinsic atomic scale modulations of the superconducting density of states.*
15. Curso de Verano en El Escorial. Julio 2007. "Cerca del cero absoluto: física de bajas y muy bajas temperaturas".
- Superconductividad en materiales magnéticos*
14. Vortex Matter in nanostructured superconductors, Rhodes, September 2007.
- Local Tunneling Spectroscopy at millikelvin temperatures: Multiband effects, and coexistence of superconductivity and magnetism in the nanoscale.*
13. II International workshop on nanomagnetism, Coma-Ruga, 1-6 July 2006.
- Scanning tunnelling microscopy and spectroscopy at 100 mK: Local density of states, vortex lattice and superconducting tips*
12. USA-Spain workshop on nanomaterials, Segovia, 20-23 September 2005.
- Very low temperature Scanning Tunneling Spectroscopy in magnetic superconductors.*
11. Spectroscopies in novel superconductors, Sitges, Spain, 11-16 July 2004.
- Local Tunneling Spectroscopy in superconductors at very low temperatures*
10. Workshop on magnetic tunnel junctions M2TPS. Zaragoza 19-20 December 2003.
- Advances and future prospects of spin dependent transport and local magnetization measurements with very low temperature STM*
9. Spin and Charge transport in nanostructures, Braga, September 2003.
- Scanning tunneling spectroscopy in superconductors below 1K: nanostructures and nanoscale phenomena*
8. Intrinsic inhomogeneities in strongly correlated electron systems. Santander, February 2003.
- Phonon mediated superconductivity induced by Fermi surface nesting in the Y and Lu Nickel borocarbides*
7. New Theories and discoveries in High Tc superconductors and related materials, San Diego, January 2003.
- Scanning tunneling spectroscopy at very low temperatures*
6. March Meeting of the American Physical Society, Indianapolis, March 2002.
- Scanning tunneling spectroscopy in MgB2 and the borocarbides*
5. Summer School on "Vortex Matter in Superconductors" Crete-Greece, September 2001.
- Keynote. *Tunneling Spectroscopy in Superconductors.*
4. Reunión de la Sección de Estado Sólido de la Real Sociedad de Física Española. Madrid, Febrero 2001. *Espectroscopía túnel local en un superconductor magnético: Interacción-competición entre la superconductividad y el magnetismo.*
3. TMR Conference on "Phase Coherent Dynamics in Hybrid Nanostructures" Cargese, Mai 2000.
- Superconducting properties of nanostructured necks under magnetic fields*
2. Euroconference on "Vortex Matter in Superconductors" Crete-Greece, September 1999
- Superconductivity under Magnetic Fields in Nanobridges of Lead*
1. International Workshop "Vortices in Exotic Systems"

dedicated to the 70th anniversary of A.A. Abrikosov. Bordeaux, October 1998.
The vortex phases of heavy fermion superconductors probed by thermal conductivity

Some contributed talks in meetings

“Phase separation between superconducting and nematic domains in Co-doped CaFe₂As₂ close to a first order phase transition”, March meeting 2018.
“Millikelvin scanning tunneling spectroscopy: electronic features of semimetals and putative topological superconductors at very low energies”, Berlin DPG-EPS CMD meeting 2018.
“STM in Vortex matter and in heavy fermions” Simposium SINUS. Grenoble. October 2009.
H. Suderow “Magnetismo y superconductividad” Simposium Consolider en Nanociencia Molecular. Miraflores de la Sierra Junio 2009.
Workshop on neutron scattering in strongly correlated electron systems. Octubre 2007. “STM in superconductors”
Meeting of the Condensed Matter Section of the French Physical Society (SFP). Orleans 1996. Conduction thermique de UPt₃
1st Nanospain Workshop, San Sebastián, Marzo 2004, Advances and future prospects of the use of superconducting tips in very low temperature STM
Conference "Trends in Nanotechnology", Toledo, October 2000. Superconducting nanostructured necks under magnetic fields: general properties and nonequilibrium effects.
Meeting of the Condensed Matter Section of the European Physical Society (EPS). Grenoble 1998. Scaling and Thermal Conductivity in UPt₃.

Some talks in laboratories or institutes

- Max Planck Institute Stuttgart, December 2018. *STM in superconductors in tilted magnetic fields.*
- Ames Laboratory, March 2017. *STM in pnictide superconductors.*
- Ames Laboratory, Argonne. November 2012. *Vortex lattice viewed by very low temperature STM in superconductors.*
- Max Planck Institut für Festkörperphysik. Junio 2011. Nanoscale Science Department. *Very low temperature STM in superconductors.*
- Van der Waals-Zeeman Colloquium. Marzo 2011. *Scanning tunneling spectroscopy at very low temperatures.*
- Max Planck Institut für Chemische Physik fester Stoffe in Dresden (2005). *STM in strongly correlated electron superconductors.*
- Ecole Supérieure de Physique et de Chimie Industrielles (ESPCI, 2004). *STM in superconductors at very low temperatures.*
- NMR lab (Kitaoka lab) Osaka University (2003). *STM at very low temperatures in MgB₂.*
- JAERI, Tokyo (2003). *STM at very low temperatures in the borocarbides.*
- Laboratorium voor Vaste-Stoffysica en Magnetisme de Leuven (Belgica) (2000) *Superconducting properties of nanoscopic junctions beyond the critical field*

Organizer

As chair or co-chair

- Organizer of the Summerschool on Quantum Materials (Braga, 2018) within the COST program nanocoHybri, see <http://nanocoHybri.eu/school-on-quantum-materials-and-workshop-on-vortex-behavior-in-unconventional-superconductors-7-12-october-2018/>.
- *Vortex 2015*. <http://www.vortex2015.org/>. Workshop partially funded by ICAM-NSF.
- *Advances in nanostructured superconductors*. 2014. COST funded workshop. <http://www.nicolascabrera.es/qadvances-in-nanostructured-superconductorsq/>.
- *Science and Technology at High Magnetic Fields*. 2012. MINECO funded workshop. <http://www.nicolascabrera.es/science-and-technology-at-high-magnetic-fields/>.
- *100 years of liquid helium: new physics at the edge of absolute zero*. Nicolás Cabrera Summer School 2008. <http://www.nicolascabrera.es/escuela-verano-2008/>. Vice-Chair.
- *Strongly Correlated Electron Physics*. Nicolás Cabrera Summer School 1999.

As committee member

International Conference on Magnetism. <http://www.icm2015.org/>.
LT28. <http://www.lt28.se/>.
Minisimposia organizer in meeting of the DPG Berlin 2018. <http://berlin18.dpg-tagungen.de/>.
Invited session organizer at the March meeting.
Vortex series of Conferences.

COMMITTEE MEMBER AND SOCIETES

APS Fellow 2017.
Member of DPG, APS, EPS, RSEF.
IUPAP C5 Committee.
Abrikosov prize committee 2015 and 2017.
GEFES-RSEF board. <https://gefes-rsef.org/>.

PROJECTS IN COMPETITIVE CALLS

Activity programs of the Comunidad de Madrid, P2018/NMT-4321 Solutions of nanomagnetism to social challenges. 1M€. PI: R. Miranda. Program comprising 5 research groups, among which the low temperature group, whose PI is H. Suderow, and 4 laboratories.

Infrastructure project of the state research agency (AEI), Increasing the delivery capabilities of the liquid Helium production and recovery system of the Campus UAM+CSIC, EQC2018-004622-P. 105 725 €. PI: H. Suderow.

Project of the state research agency (AEI, 2018-2020). Integrating devices in nanoscale microscopy to visualize quantum materials under control. QuM-CONTROSCOPY. FIS2017-84330-R. 272 000 € (costes directos). Co-PIs I. Guillamón and H. Suderow.

COST program (2017-2021). Nanoscale coherent hybrid devices for superconducting quantum technologies. NANOCOBYBRI. Approx 150 000 € each year. Chairman H. Suderow. Over 100 participants from 27 countries.

Internal project of IFIMAC (MDM-2014-0377). Visualizing, understanding and controlling Andreev bound states down to atomic scale. 160 000 € (costes directos). PIs H. Suderow and A.L. Yeyati.

Project of the state research agency (AEI, 2015-2017). Two-dimensional superconductivity, new phenomena for new applications. FIS2014-54498-R. 130 000 € (costes directos). PI H. Suderow.

Unidad de Excelencia María de Maeztu IFIMAC internal project. *Visualizing, understanding and controlling Andreev bound states down to atomic scale*. IPs: H. Suderow y A. Levy Yeyati. 160k€.

Mineco, call 2014. FIS2014-54498-R.
Two-dimensional superconductivity: new phenomena for new applications.
PI : H. Suderow. 130k€.

Research programs of the Region of Madrid.
Nuevas fronteras del nanomagnetismo fundamental y aplicado. Nanofrontmag-CM. P/2013-MIT2850.
PI: R. Miranda. 894k€. PI of low temperature group: H. Suderow

Technical infrastructures 2013. Mineco.
Compact high pressure helium gas storage system for the Campus UAM+CSIC. UAMA13-4E-2284
PI: H. Suderow. 70 k€.

Cooperative projects with Asia Banco Santander - UAM (2013).
Synthesis and characterization of nanostructured superconductors.
PI: H. Suderow. 10k€.

Marie Curie Program 2013
ExtremeFieldImaging – Scanning tunneling spectroscopy at high magnetic fields: visualizing pnictide and heavy fermion superconductivity
CIG FP7-PEOPLE-2013-CIG-618321.
PI: I. Guillamón

COST program 2012.
Nanoscale superconductivity: novel functionalities through optimized confinement of condensate and fields. NanoSC-COST.
Spanish coordinator: H. Suderow (PI of the action V. Moshchalkov).

ACI-Promociona call 2011.
High magnetic field science and technology
PI: H. Suderow. ACI-PRO-2011-1134.

Mineco call 2011. FIS2011-23488.
Direct observation of individual and collective properties of superconducting vortices using scanning tunneling microscopy.
PI: H. Suderow.

Collaborative projects Banco Santander - UAM 2011.
Superconductivity: a century of a multidisciplinary effort.
PI: H. Suderow

ACI-Colabora with India. 2010.
Fabricación y estudio de nanoestructuras en dicalcogenuros superconductores.
PI: H. Suderow. Mayo 2010-Abril 2013. Referencia ACI2009-0905.

Mineco 2007 call. FIS2008-00454.

High resolution tunneling spectroscopy in the millikelvin: studying superconductors with spin and charge order.

PI: H. Suderow

Fundamentos y aplicaciones de moléculas, nanopartículas y nanoestructuras

Comunidad Autónoma de Madrid, S2009/MAT-1726 (NANOBIOMAGNET)

Investigador principal: Rodolfo Miranda Soriano. 2010-2013.

Sabbatical stay of V. Tissen.

Fermi surface under pressure: upper critical field down to millikelvin temperatures of superconductors with competing orders.

SAB2009-0057. PI: S. Vieira.

Consolider-Ingenio 2010 program of Ministerio de Educación y Ciencia (2007-2011).

Molecular Nanoscience. CDS2007-00010. PI: E. Coronado Miralles.

Comunidad de Madrid, 2005 call (2006-2010).

Science and technology in the millikelvin. S-0505/ESP/0337. Coordinator: S. Vieira.

National funding organization call 2003. FIS2004-028977.

Punta superconductor para microscopía y espectroscopía túnel local a muy bajas temperaturas: Estudio de algunos sistemas superconductores y magnéticos

PI: H. Suderow

Nano-Science and Engineering in Superconductivity (NES)

Core-to-Core program Japan-USA-EU. Japan Society for Promotion of Science and European Science Foundation.

European coordinator: V. Moshchalkov. Japanese coordinator: Kazuo Kadowaki

Emergent behavior in Correlated Matter (ECOM)

European Science Foundation – COST, programa P-16

Marie Curie advanced cryogenics course "Cryocourse"

European Commission Contract Nr MSCF-CT-2006-045781

PI: H. Godfrin, Grenoble

Materiales Magnéticos y superconductores a muy bajas temperaturas: nanoestructuras y transporte de espín a escala atómica (2002-2004). 07N/0053/2002

PI: H. Suderow

Fabricación de sistemas metálicos nanoscópicos y su caracterización a bajas y muy bajas temperaturas (2002-2005)

MAT2001-1281-C02-01

PI: N. Agraït de la Puente

STM study of MgB₂ single crystals (2002-2003)

Bilateral NEDO collaboration with S. Tajima and S. Lee, del ISTE (Japón)

PI: S. Vieira y S. Tajima

Estudio a bajas temperaturas del espectro de excitaciones de superconductores magnéticos (2002-2004)

Bilateral CSIC-CNRS program with J.P. Brison in Grenoble

Magnetoresistencia colosal a temperatura ambiente en sistemas de Mn: Policristales, monocristales y láminas delgadas (1999-2002). MAT99-1045

PI: J.L. Martinez

Espectroscopía a escala nanométrica y medidas térmicas en materiales con electrones fuertemente correlacionados (1-10-98 al 1-10-2001)

DGICYT PB97-0068. PI: S. Vieira

Propiedades eléctricas, mecánicas y térmicas de estructuras submicrométricas de plomo y oro a bajas temperaturas (1-10-98 al 1-10-98)

DGICYT MAT95-1542. PI: S. Vieira

Superconductores magnéticos: El caso de los borocarburos. Búsqueda de una nueva fase superconductor modulada bajo fuertes campos magnéticos y bajas temperaturas (1999-2000)

Bilateral Madrid-Grenoble project. PI: S. Vieira

Vortex matter in superconductors at extreme scales and conditions

European Science Foundation. Coordinator in Spain: S. Vieira. PI: V. Moshchalkov (Leuven-Belgica)

Fermi liquid instabilities in correlated metals (FERLIN) (1998-2002)
European Science Foundation
<http://www.esf.org/physical/pp/FERLIN/ferlina.htm>

Scanning tunneling microscopy in exotic superconductors (1998-2000)
Marie Curie/TMR), ERBFMICT972499