

Curriculum vitae - Jorge Cayao

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Name: Jorge Luis Cayao Díaz
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RESEARCH INTERESTS

- Condensed matter theory: topological, dynamic, magnetic, and non-Hermitian phases
- Topological matter: Majorana states in topological superconductors, topological insulators and spin-orbit coupled systems, Chern phases, Weyl semimetals
- Non-Hermitian systems: non-Hermitian topology, Andreev and Josephson exceptional physics, dissipative superconductors, lasing, sensing
- Floquet engineering: light-controlled phases, nonequilibrium superconductivity, collective modes
- Odd-frequency superconductivity: pair symmetry classification, dynamic Cooper pairs
- Quantum computing: qubits, quantum gates, quantum simulations

POSITION

01/01/2022-present	Senior Researcher at Uppsala University, Sweden Leading an independent research group
15/03/2023-13/05/2023	Visiting researcher at Nagoya University, Japan Group of Prof. Y. Tanaka
01/01/2020-31/12/2021	Researcher at Uppsala University, Sweden Group of Prof. A. M. Black-Schaffer
01/02/2021-28/03/2021	Visiting researcher at Duisburg-Essen University, Germany Group of Prof. B. Sothmann
20/06/2016-31/12/2019	Postdoctoral Researcher at Uppsala University, Sweden Group of Prof. A. M. Black-Schaffer
05/08/2019-04/10/2019	Visiting researcher at University of Konstanz, Germany Group of Prof. G. Burkard.
01/11/2018-15/02/2019	Visiting researcher at TU Dresden, Germany Group of Prof. J. C. Budich
01/01/2012-20/05/2016	Jae PreDoc (PhD) Fellow at Materials Science Institute of Madrid, CSIC, Spain Group of Dr. R. Aguado
10/09/2014-10/12/2014	Visiting Scholar at RIKEN, Tokyo, Japan Group of Prof. D. Loss. Supervisor: Dr. P. Staño
01/08/2013-31/08/2013	Visiting Scholar at Slovak Academy of Sciences, Slovakia Group of Prof. V. Bužek. Supervisor: Dr. P. Staño
01/08/2011-31/12/2011	SAP Engineer at Hewlett-Packard, Slovakia Monitored SAP systems and provided technical support
01/09/2008-31/12/2010	Teacher of Physics and Informatics at Primary School for Intellectually Gifted Children “Intelekt”, Bratislava, Slovakia
01/07/2008-30/09/2008	Undergrad research assistant at Slovak Academy of Sciences, Bratislava, Slovakia Group of Prof. V. Bužek. Supervisor: Dr. P. Staño
01/09/2007-30/06/2008	Undergrad research assistant at Comenius University, Bratislava, Slovakia Group of Prof. Š. Matejčík. Supervisor: Dr. J. Kočíšek

EDUCATION

08/11/2024	Docent (Habilitation) in Physics with specialization in Quantum Matter Theory, Uppsala University, Sweden
30/01/2012- 20/05/2016	PhD in Condensed Matter Physics , Autonomous University of Madrid, Spain Thesis: Hybrid superconductor-semiconductor nanowire junctions as platforms to study Majorana bound states. Supervisor: Dr. R. Aguado
11/09/2009- 23/06/2011	Master in Physics , Comenius University, Slovakia Thesis: Approaches of near stars to the Sun. Supervisor: Prof. J. Klačka
06/09/2006- 25/06/2009	Bachelor in Physics , Comenius University, Slovakia Thesis: Comparison of methods for computing the exchange energy of quantum helium and hydrogen. Supervisor: Dr. P. Staňo
05/09/2005- 01/06/2006	Slovak Language and Academic Preparation , Comenius University, Slovakia Part of the study program for foreign students
01/03/2004- 31/07/2005	Bachelor in Physics , Universidad Nacional Mayor de San Marcos, Peru Attended three semesters and then continued studies in Slovakia

PUBLICATIONS AND PREPRINTS

Citations: 2548; **h-index:** 25. **i10-index:** 51. Google Scholar, Mar 2026.

65. S. Mondal, **J. Cayao**
Spin-polarized Andreev molecules and anomalous nonlocal Josephson effects in altermagnetic junctions
Preprint: arXiv:2603.04954 (2026). Citations: 1.
64. F. Kayatz, A. M. Black-Schaffer, **J. Cayao**
Superconducting properties of transition metal dichalcogenides in proximity to a conventional superconductor
Preprint: arXiv:2601.21994 (2026). Citations: 0.
63. V. K. Vimal, **J. Cayao**
Entanglement dynamics in minimal Kitaev chains
Preprint: arXiv:2507.17586 (2025). Citations: 3.
62. Y. Fukaya, B. Lu, K. Yada, Y. Tanaka, **J. Cayao**
Crossed surface flat bands in three-dimensional superconducting altermagnets
Accepted in Phys. Rev. Lett. Preprint: arXiv:2510.14724 (2025). Citations: 5.
61. B. Lu, P. Mercebach, P. Burset, K. Yada, **J. Cayao**, Y. Tanaka, Y. Fukaya
Engineering subgap states in superconductors by altermagnetism
Accepted in Phys. Rev. B as a Letter. [Editors' Suggestion](#). Preprint: arXiv:2508.03364 (2025). Citations: 4.
60. I. Sardinero, **J. Cayao**, K. Yada, Y. Tanaka, P. Burset
The Josephson effect in Fibonacci superconductors
Accepted in Phys. Rev. Lett. Preprint: arXiv:2507.19147 (2025). Citations: 1.
59. **J. Cayao**, M. Sato
Nonlocal Josephson diode effect in minimal Kitaev chains
Phys. Rev. Research 8, 013326 (2026). [arXiv:2512.00664]. Citations: 1.
58. P.-H. Fu, S. Mondal, J.-F. Liu, **J. Cayao**
Light-induced Floquet spin-triplet Cooper pairs in unconventional magnets
SciPost Phys. 20, 059 (2026). [arXiv:2506.10590]. Citations: 12.

57. P.-H. Fu, S. Mondal, J.-F. Liu, Y. Tanaka, **J. Cayao**
Floquet engineering spin triplet states in unconventional magnets
Phys. Rev. Lett. 136, 066703 (2026). [arXiv:2505.20205]. [Editors' Suggestion](#). Citations: 21.
56. I. Sardinero, **J. Cayao**, R. Seoane Souto, P. Burset
Odd-frequency Pairing in Josephson Junctions Coupled by Magnetic Textures
Phys. Status Solidi RRL 20, e202500413 (2026). [arXiv:2510.08171]. Citations: 0.
55. P.-H. Fu, Q. Lv, Y. Xu, **J. Cayao**, J.-F. Liu, X.-L. Yu
All-electrically controlled spintronics in altermagnetic heterostructures
npj Quantum Matter. 10, 111 (2025). [arXiv:2506.05504]. Citations: 17.
54. **J. Cayao**, M. Sato
Non-Hermitian Josephson junctions with four Majorana zero modes
J. Phys. Soc. Jpn. 95, 014705 (2026). [arXiv:2508.19433]. Citations: 1.
53. T. Mizushima, Y. Tanaka, **J. Cayao**
Detecting the Topological Phase Transition in Superconductor-Semiconductor Hybrids by Electronic Raman Spectroscopy
Phys. Rev. B 112, 174504 (2025). [arXiv:2502.19841]. Citations: 4.
52. S. Mondal, P.-H. Fu, **J. Cayao**
Josephson diode effect with Andreev and Majorana bound states
Phys. Rev. B 112, 144506 (2025). [arXiv:2503.08318]. Citations: 16.
51. E. Ahmed, Y. Tanaka, **J. Cayao**
Anomalous proximity effect under Andreev and Majorana bound states
J. Supercond. Nov. Magn. 38, 220 (2025). [arXiv:2505.03726]. Citations: 5.
50. Y. Fukaya, B. Lu, K. Yada, Y. Tanaka, **J. Cayao**
Superconducting phenomena in systems with unconventional magnets
J. Phys.: Condens. Matter 37, 313003 (2025). [arXiv:2502.15400]. Citations: 77.
49. E. Ahmed, S. Tamura, Y. Tanaka, **J. Cayao**
Odd-frequency pairing due to Majorana and trivial Andreev bound states
Phys. Rev. B 111, 224508 (2025). [arXiv:2412.14439]. Citations: 12.
48. **J. Cayao**, R. Aguado
Non-Hermitian minimal Kitaev chains
Phys. Rev. B 111, 205432 (2025). [arXiv:2406.18974]. Citations: 25.
47. W. Zhao, Y. Fukaya, P. Burset, **J. Cayao**, Y. Tanaka, B. Lu,
Orientation dependent transport in junctions formed by *d*-wave altermagnets and *d*-wave superconductors
Phys. Rev. B 111, 184515 (2025). [arXiv:2501.12141]. Citations: 27.
46. K. Maeda, Y. Fukaya, K. Yada, B. Lu, Y. Tanaka, **J. Cayao**,
Classification of pair symmetries in superconductors with unconventional magnetism
Physical Review B 111, 144508 (2025). [arXiv:2501.08646]. Citations: 40.
45. E. Ahmed, S. Tamura, Y. Tanaka, **J. Cayao**
Odd-frequency superconducting pairing and multiple Majorana edge modes in driven topological superconductors
Phys. Rev. B 111, 024507 (2025). [arXiv:2404.09517]. Citations: 11.
44. Y. Fukaya, K. Maeda, K. Yada, **J. Cayao**, Y. Tanaka, B. Lu
Josephson effect and odd-frequency pairing in superconducting junctions with unconventional magnets
Phys. Rev. B 111, 064502 (2025). [arXiv:2411.02679]. Citations: 46.

43. **J. Cayao**, M. Sato
Non-Hermitian multiterminal phase-biased Josephson junctions
Phys. Rev. B 110, 235426 (2024). [arXiv:2408.17260]. [Editors' Suggestion](#). Citations: 15.
42. V. K. Vimal, **J. Cayao**
Entanglement measures of Majorana bound states
Phys. Rev. B 110, 224510 (2024). [arXiv:2404.14900]. Citations: 15.
41. **J. Cayao**, M. Sato
Non-Hermitian phase-biased Josephson junctions
Phys. Rev. B 110, L201403 (2024). [arXiv:2307.15472]. Citations: 30.
40. O. A. Awoga, **J. Cayao**
Identifying trivial and Majorana zero-energy modes using the Majorana polarization
Phys. Rev. B 110, 165404 (2024). [arXiv:2406.11991]. Citations: 23.
39. **J. Cayao**
Emergent pair symmetries in systems with poor man's Majorana modes
Phys. Rev. B 110, 125408 (2024). [arXiv:2406.17508]. Citations: 12.
38. **J. Cayao**
Non-Hermitian zero-energy pinning of Andreev and Majorana bound states in superconductor-semiconductor systems
Phys. Rev. B 110, 085414 (2024). [arXiv:2404.11026]. Citations: 16.
37. **J. Cayao**, P. Burset, Y. Tanaka
Controllable odd-frequency Cooper pairs in multi-superconductor Josephson junctions
Phys. Rev. B 109, 205406 (2024). [arXiv:2306.03017]. Citations: 16.
36. **J. Cayao**, N. Nagaosa, Y. Tanaka
Enhancing the Josephson diode effect with Majorana bound states
Phys. Rev. B 109, L081405 (2024). [arXiv:2309.15567]. Citations: 66.
35. Y. Tanaka, S. Tamura, **J. Cayao**
Theory of Majorana zero modes in unconventional superconductors
Prog. Theor. Exp. Phys. 2024, 08C105 (2024). [arXiv:2402.00643]. (Invited review). Citations: 92.
34. T. Kuhn, B. Sothmann, **J. Cayao**
Floquet engineering Higgs dynamics in time-periodic superconductors
Phys. Rev. B 109, 134517 (2024). [arXiv:2312.13785]. Citations: 12.
33. P. Dutta, **J. Cayao**, A. M. Black-Schaffer, P. Burset
Nonlocality of Majorana bound states revealed by electron waiting times in a topological Andreev interferometer
Phys. Rev. Research 6, L012062 (2024). [arXiv:2306.14964]. Citations: 9.
32. R. Arouca, **J. Cayao**, A. M. Black-Schaffer
Topological superconductivity enhanced by exceptional points
Phys. Rev. B 108, L060506 (2023). Citations: 20.
31. **J. Cayao**
Exceptional degeneracies in non-Hermitian Rashba semiconductors
J. Phys.: Condens. Matter 35, 254002 (2023). Citations: 20.
30. L. Baldo, L. G. G. V. Dias Da Silva, A. M. Black-Schaffer, **J. Cayao**
Zero-frequency supercurrent susceptibility signatures of trivial and topological zero-energy states in nanowire junctions
Supercond. Sci. Technol. 36, 034003 (2023). Citations: 22.
29. **J. Cayao**, A. M. Black-Schaffer
Bulk Bogoliubov Fermi arcs in non-Hermitian superconducting systems
Phys. Rev. B 107, 104515 (2023). Citations: 20.

28. O. A. Awoga, M. Leijnse, A. M. Black-Schaffer, **J. Cayao**
Mitigating disorder-induced zero-energy states in weakly-coupled semiconductor-superconductor hybrid systems
Phys. Rev. B 107, 184519 (2023). Citations: 21.
27. **J. Cayao**, P. Dutta, P. Burset, A. M. Black-Schaffer
Phase-tunable electron transport assisted by odd-frequency Cooper pairs in topological Josephson junctions
Phys. Rev. B 106, L100502 (2022). Citations: 25.
26. O. A. Awoga, **J. Cayao**, A. M. Black-Schaffer
Robust topological superconductivity in weakly coupled nanowire-superconductor hybrid structures
Phys. Rev. B 105, 144509 (2022). [Editors' Suggestion](#). Citations: 19.
25. **J. Cayao**, A. M. Black-Schaffer
Exceptional odd-frequency pairing in non-Hermitian superconducting systems
Phys. Rev. B 105, 094502 (2022). Citations: 42.
24. **J. Cayao**, P. Burset
Confinement-induced zero-bias peaks in conventional superconductor hybrids
Phys. Rev. B 104, 134507 (2021). Citations: 39.
23. T. Löthman, C. Triola, **J. Cayao**, A. M. Black-Schaffer
Efficient numerical method for evaluating time-dependent equilibrium Green's functions in inhomogeneous normal-state materials and superconductors
Phys. Rev. B 104, 125405 (2021). Citations: 10.
22. T. Löthman, C. Triola, **J. Cayao**, A. M. Black-Schaffer
Disorder-robust p -wave pairing with odd frequency dependence in normal metal-conventional superconductor junctions
Phys. Rev. B 104, 094503 (2021). Citations: 12.
21. **J. Cayao**, A. M. Black-Schaffer
Distinguishing trivial and topological zero energy states in long nanowire junctions
Phys. Rev. B 104, L020501 (2021). Citations: 56.
20. **J. Cayao**, C. Triola, A. M. Black-Schaffer
Floquet engineering bulk odd-frequency superconducting pairs
Phys. Rev. B 103, 104505 (2021). Citations: 27.
19. S. Tamura, S. Nakosai, A. M. Black-Schaffer, Y. Tanaka, **J. Cayao**
Bulk odd-frequency pairing in the superconducting Su-Schrieffer-Heeger model
Phys. Rev. B 101, 214507 (2020). Citations: 21.
18. **J. Cayao**, M. Benito, G. Burkard
Programmable two-qubit gates in capacitively coupled flopping-mode spin qubits
Phys. Rev. B 101, 195438 (2020). Citations: 22.
17. D. Kuzmanovski, A. M. Black-Schaffer, **J. Cayao**
Suppression of odd-frequency pairing by phase-disorder in a nanowire coupled to Majorana zero modes
Phys. Rev. B 101, 094506 (2020). Citations: 21.
16. **J. Cayao**, C. Triola, A. M. Black-Schaffer
Odd-frequency superconducting pairing in one-dimensional systems
Eur. Phys. J. Special Topics 229, 545-575 (2020). (Invited review). Citations: 99.
15. C. Triola, **J. Cayao**, A. M. Black-Schaffer
The Role of Odd-Frequency Pairing in Multiband Superconductors
Annalen der Physik 1900298 (2020). (Invited review). Citations: 74.

14. A. Tsintzis, A. M. Black-Schaffer, **J. Cayao**
Odd-frequency superconducting pairing in Kitaev-based junctions
Phys. Rev. B 100, 115433 (2019). Citations: 27.
13. O. A. Awoga, **J. Cayao**, A. M. Black-Schaffer
Supercurrent detection of topologically trivial zero-energy states in nanowire junctions
Phys. Rev. Lett. 123, 117001 (2019). Citations: 141.
12. **J. Cayao**, A. M. Black-Schaffer
Finite length effect on supercurrents between trivial and topological superconductors
Eur. Phys. J. Spec. Top. 227, 1387-1396 (2018). Citations: 27.
11. **J. Cayao**, A. M. Black-Schaffer
Odd-frequency superconducting pairing in junctions with Rashba spin-orbit coupling
Phys. Rev. B 98, 075425 (2018). Citations: 59.
10. **J. Cayao**, A. M. Black-Schaffer, E. Prada, R. Aguado
Andreev spectrum and supercurrents in nanowire-based SNS junctions containing Majorana bound states.
Beilstein J. Nanotechnol. 9, 1339 (2018). Citations: 73.
9. **J. Cayao**, P. San-José, A. M. Black-Schaffer, R. Aguado, E. Prada
Majorana splittings from critical currents in Josephson junctions.
Phys. Rev. B 96, 205425 (2017). Citations: 157.
8. **J. Cayao**, A. Black-Schaffer
Odd-frequency superconducting pairing and subgap density of states at the edge of a two-dimensional topological insulator without magnetism.
Phys. Rev. B 96, 155426 (2017). Citations: 87.
7. F. Domínguez, **J. Cayao**, P. San-José, R. Aguado, Alfredo Levy Yeyati, Elsa Prada
Zero-energy pinning from interactions in Majorana nanowires.
npj Quantum Materials 2, 13 (2017). Citations: 67.
6. P. San-José, **J. Cayao**, E. Prada, R. Aguado
Majorana bound states from exceptional points in non-topological superconductors.
Scientific reports 6, 21427 (2016). Citations: 296.
5. **J. Cayao**, E. Prada, P. San-José, R. Aguado
SNS junctions in nanowires with spin-orbit coupling: role of confinement and helicity on the sub-gap spectrum.
Phys. Rev. B 91, 024514 (2015). Citations: 206.
4. P. San-José, **J. Cayao**, E. Prada, R. Aguado
Multiple Andreev reflection and critical current in topological superconducting nanowire junctions.
New J. Phys. 15, 075019 (2013). Citations: 129.
3. **J. Cayao**
Approaches of near stars to the Sun.
Preprint: arXiv:1409.1759 (2011). Results of master thesis. Citations: 0.
2. **J. Cayao**
Comparison of methods for computing the exchange energy in laterally coupled quantum dots.
Preprint: arXiv:1009.3069 (2010). Results of bachelor thesis. Citations: 1.
1. V. Brites, G. Chambaud, M. Hochlaf, J. Kočišek, **J. L. Cayao Diaz**, Š. Matejíček, and F. Krčma
Ionic chemistry of Tetravinylsilane cation (TVS⁺) formed by electron impact: theory and experiment.
The Journal of Physical Chemistry A, 113 (23), 6531-6536 (2009). Citations: 7.

INVITED AND CONTRIBUTED TALKS

- 22/04/2026 [Invited] Nonlocal Josephson effect in minimal Kitaev chains. 11th International Conference on Superconductivity and Magnetism - "ICSM2026", Mugla, Turkey
- 13/03/2026 [Contributed] Crossed surface flat bands in three-dimensional superconducting altermagnets. DPG Meeting, German Physical Society, Berlin, Germany
- 17/10/2025 [Invited] Guest lecture within the "Introduction to Materials Science" course, Uppsala University, Sweden
- 05/11/2024 [Invited] Superconducting spintronics with spin-orbit coupled materials. WISE Seminar, Uppsala University, Sweden
- 27/09/2024 [Invited] Non-Hermitian phase-biased Josephson junctions. Department seminar, *online*, IBM Research, Zurich, Switzerland
- 30/04/2024 [Invited] Majorana bound states in superconductor-semiconductor hybrids. Workshop on superconductivity, correlations, transport and layered materials, Slovak Academy of Sciences, Slovakia.
- 23/04/2024 [Invited] Non-Hermitian zero-energy pinning of Andreev and Majorana bound states. Department seminar, Department of Applied Physics, Nagoya University, Japan
- 18/03/2024 [Contributed] Non-Hermitian phase-biased Josephson junctions. DPG Meeting, German Physical Society, Berlin, Germany
- 07/02/2024 [Invited] Identification of Majorana Bound States in Josephson Junctions. Minisymposium on Quantum Information Science, Uppsala University, Sweden.
- 26/04/2023 [Invited] Detecting Majorana bound states in semiconductor-superconductor Josephson junctions. Department seminar, Department of Applied Physics, Nagoya University, Japan.
- 26/04/2023 [Invited] Detecting Majorana bound states in semiconductor-superconductor Josephson junctions. Department seminar, Department of Materials Engineering Science, Osaka University, Japan.
- 25/04/2023 [Invited] Trivial and topological zero-energy states in nanowire junctions. Department seminar, Yukawa Institute of Theoretical Physics, Kyoto University, Japan.
- 20/04/2023 [Invited] Detecting Majorana bound states in phase-biased Josephson junctions. Department seminar, Center for Emergent Matter Science RIKEN, Japan.
- 14/04/2023 [Invited] Trivial and topological zero-energy states in nanowire junctions. Department seminar, Department of Applied Physics, Hokkaido University, Japan
- 09/11/2022 [Invited] Non-Hermitian topology in superconducting systems. IEEE NanoPeru 2022, IEEE Nanotechnology Council, Peru Chapter
- 08/04/2022 [Contributed] Non-Hermitian physics in superconducting systems. Friday department seminar, Department of Physics and Astronomy, Uppsala University, Sweden
- 06/04/2022 [Contributed] Odd-frequency Cooper pair-assisted transport in topological Josephson junctions. Wednesday department seminar, Department of Physics and Astronomy, Uppsala University, Sweden
- 15/03/2022 [Contributed] Majorana states in topological superconductors. Condensed Matter Physics Seminar, *online*. Department of Physics and Astronomy, Uppsala University, Sweden.
- 07/03/2022 [Invited] Highly tunable exceptional points in Rashba superconductors. Workshop on Quantum materials and devices at the nanoscale, COST meeting, Madrid, Spain
- 10/02/2022 [Invited] Topological quantum computers. Workshop on Materials for Future Electronics and Digitalisation, *online*. Big Science Sweden, Ångström Materials Academy, Uppsala University, Sweden.

- 21/10/2021 [\[Invited\]](#) Odd-frequency pairing in systems with conventional superconductivity. Mini-symposium for the PhD defense of Fabian Schrodi, *online*. Department of Physics and Astronomy, Uppsala University, Sweden.
- 20/08/2021 [\[Invited\]](#) Exceptional odd-frequency pairing in non-Hermitian superconductors. Department Seminar, *online*, Department of Applied Physics, Nagoya University, Japan.
- 18/08/2021 [\[Invited\]](#) Engineering exotic Cooper pairs using conventional superconductors. Department Seminar, *online*, Institute of Physics of the Czech Academy of Sciences, Prague, Czech Republic.
- 10/08/2021 [\[Invited\]](#) Exotic Cooper pair symmetries by conventional superconductors. Department Seminar, *online*, Institute for Theoretical Physics, TU Wien, Austria.
- 05/08/2021 [\[Contributed\]](#) Detection of topologically trivial- and non-trivial zero-energy states by the Josephson effect. Nordic Physics Days 2021, *online*, Uppsala, Sweden.
- 28/07/2021 [\[Invited\]](#) Engineering dynamical Cooper pairs with conventional superconductors. Department seminar, *online*, Institute of Physics, UNAM, Mexico
- 01/07/2021 [\[Invited\]](#) Distinguishing trivial and topological zero-energy states in Josephson junctions. Workshop on Superconducting Hybrids @ Extreme, COST meeting, *online*. Strbské Pleso, Slovakia.
- 10/06/2021 [\[Invited\]](#) Distinguishing trivial and topological zero-energy states in Josephson junctions. Mini-symposium for the PhD defense of Oladunjoye Awoga, *online*. Department of Physics and Astronomy, Uppsala University, Sweden.
- 14/04/2021 [\[Contributed\]](#) Confinement-induced zero-energy states in superconducting hybrids. Department seminar, *online*, Department of Physics and Astronomy, Uppsala University, Sweden.
- 09/04/2021 [\[Invited\]](#) Topological superconductivity. Department seminar, *online*, Physics department, Universidad del Valle, Colombia.
- 29/01/2021 [\[Contributed\]](#) Odd-frequency pairs in superconducting systems. Theoriekolloquium, *online*, Physics department, Duisburg-Essen University, Germany.
- 21/11/2020 [\[Invited\]](#) Física del calentamiento global. Online seminar series of Escuela Académico Profesional de Ingeniería Ambiental, Universidad Nacional de Cajamarca, sede Celendín, Peru
- 18/11/2020 [\[Invited\]](#) Educación y ciencia como base para una sociedad justa. *Online* Workshop. IESTP Nuestra Señora de las Mercedes, Ninabamba, Santa Cruz, Cajamarca, Peru
- 12/11/2020 [\[Invited\]](#) La ciencia como herramienta de cambio. Keynote speaker. Anniversary of I.E. Elias Aguirre, *online*, Chiclayo, Peru
- 21/10/2020 [\[Contributed\]](#) Odd-frequency pairing in non-Hermitian systems. Wednesday department seminar, *online*, Department of Physics and Astronomy, Uppsala University, Sweden
- 31/06/2020 [\[Invited\]](#) Recent advances in condensed matter physics. Anniversary of I.E. Cirilo Sanchez Cabrejos, *online*, Santa Cruz, Cajamarca, Peru
- 05/06/2020 [\[Contributed\]](#) Programmable two qubit gates in one-electron double quantum dots via capacitive coupling. Friday department seminar, *online*, Department of Physics and Astronomy, Uppsala University, Sweden
- 19/05/2020 [\[Invited\]](#) Majorana signatures in Josephson junctions. Department seminar, *online*, Department of Physics and Materials Science, Luxembourg University, Luxembourg.
- 29/11/2019 [\[Invited\]](#) Science, Technology, and Education. First Scientific Meeting at I.E. Cirilo Sanchez Cabrejos, Santa Cruz, Cajamarca, Peru.
- 27/11/2019 [\[Invited\]](#) Odd-frequency superconductivity. Keynote speaker. Peruvian Physics Symposium at Universidad Nacional de Trujillo, Trujillo, Peru.

- 25/11/2019 [\[Invited\]](#) Odd-frequency superconductivity. Faculty of Natural Sciences and Mathematics at Universidad Federico Villareal, Lima, Peru.
- 16/10/2019 [\[Contributed\]](#) Programmable two qubit gates in one-electron double quantum dots via capacitive coupling. Wednesday department seminar, Department of Physics and Astronomy, Uppsala University, Sweden.
- 08/07/2019 [\[Invited\]](#) Probing topological superconductivity in Josephson junctions. Topological Materials Science Seminar, Applied Physics Department, Nagoya University, Japan.
- 14/06/2019 [\[Invited\]](#) Majorana signatures in Josephson junctions. Theoriekolloquium, Physics department, Duisburg-Essen University, Germany.
- 08/03/2019 [\[Contributed\]](#) Suppression of odd-frequency superconducting pairing by phase-disorder in a nanowire coupled to Majorana zero modes. APS March Meeting 2019. Boston, MA, USA.
- 17/10/2018 [\[Contributed\]](#) Static screening in nanowires with Rashba spin-orbit coupling. Wednesday department seminar, Department of Physics and Astronomy, Uppsala University, Sweden
- 12/10/2018 [\[Invited\]](#) Odd-frequency superconducting pairing in junctions with spin-orbit coupling. Workshop on vortex behavior in unconventional superconductors. Braga, Portugal.
- 18/09/2018 [\[Invited\]](#) Odd-frequency superconducting pairing in junctions with spin-orbit coupling. Topological Materials Science Seminar, Department of Applied Physics, Nagoya University, Nagoya, Japan.
- 18/07/2018 [\[Invited\]](#) Majorana splitting from critical currents in Josephson junctions. Department seminar at Institute for theoretical physics, TU Dresden, Germany.
- 11/04/2018 [\[Contributed\]](#) Helical transport in phase-biased SNS junctions. Wednesday department seminar, Department of Physics and Astronomy, Uppsala University, Sweden.
- 20/03/2018 [\[Invited\]](#) Majorana splitting from critical currents in Josephson junctions. SU/Nordita Condensed Matter Seminar, Stockholm. Sweden.
- 07/03/2018 [\[Contributed\]](#) Odd-frequency superconducting pairing in junctions with spin-orbit coupling. APS March Meeting 2018. Los Angeles, CA, USA.
- 19/01/2018 [\[Contributed\]](#) Majorana splitting from critical currents in Josephson junctions. Friday department seminar, Department of Physics and Astronomy, Uppsala University, Sweden.
- 15/11/2017 [\[Contributed\]](#) Odd-frequency superconducting pairing in junctions with spin-orbit coupling. Wednesday seminar, Department of Physics and Astronomy, Uppsala University, Sweden.
- 15/09/2017 [\[Contributed\]](#) Odd-frequency pairing at the edge of a 2D topological insulator without magnetism. Friday department seminar, Department of Physics and Astronomy, Uppsala University, Sweden.
- 21/06/2017 [\[Invited\]](#) Majorana overlaps from critical currents. Department seminar, Institute of Physics, Zagreb, Croatia.
- 31/05/2017 [\[Contributed\]](#) Majorana overlaps from critical currents. Wednesday department seminar, Department of Physics and Astronomy, Uppsala University, Sweden.
- 14/03/2017 [\[Contributed\]](#) Odd-frequency superconducting pairing at the edge of a 2D topological insulator without magnetism. APS March Meeting 2017. New Orleans, LA, USA.
- 23/11/2016 [\[Contributed\]](#) Odd-frequency superconducting pairing at the edge of a 2D topological insulator without magnetism. Wednesday seminar, Department of Physics and Astronomy, Uppsala University, Sweden.
- 08/03/2016 [\[Invited\]](#) Superconductor-Nanowire-Superconductor junctions as useful platform to study Majorana Bound States. Department seminar, Department of Theoretical Physics, Würzburg University, Germany

- 25/02/2016 [Invited] Superconductor-Nanowire-Superconductor junctions as useful platform to study Majorana Bound States. Department seminar, Department of Physics and Astronomy, Uppsala University, Sweden.
- 15/12/2015 [Contributed] Majorana bound states from exceptional points in non-topological superconductors. Arctic school on open quantum systems. Kilpisjärvi, University of Helsinki. Finland.
- 16/01/2015 [Invited] Majorana fermions in condensed matter physics. Summer physics Colloquium, Faculty of Physical Sciences, Universidad Nacional Mayor de San Marcos, Lima, Peru.
- 21/08/2013 [Contributed] MAR and critical current in topological superconducting nanowire junctions. Institute of Physics, Slovak Academy of Sciences, Bratislava, Slovakia.
- 21/05/2010 [Contributed] Electron spin dynamics in quantum dots due to hyperfine interaction with nuclei. Czech-Slovak Student Science Conference. Comenius University. Bratislava, Slovakia.
- 29/05/2009 [Contributed] Comparison of Methods for Computing the Exchange Energy of quantum helium and hydrogen. National Student Science Conference. Comenius University. Bratislava, Slovakia.
- 20/03/2009 [Contributed] Comparison of Methods for Computing the Exchange Energy of quantum helium and hydrogen. II Conference of Physics Students. University of La Laguna, Spain.
- 16/05/2008 [Contributed] Ionizácia tetravinyľ silánu nárazom elektrónu. National Student Science Conference. Comenius University. Bratislava, Slovakia.

POSTER CONTRIBUTIONS

- 04/09/2017 Andreev spectrum and supercurrents in SNS junctions made of nanowires with spin-orbit coupling. XXIV International Summer School Nicolás Cabrera: Quantum Transport in Topological Materials. Madrid, Spain.
- 14/05/2017 Majorana overlaps from critical currents. Conference on Majorana states in condensed matter: Towards Topological. Mallorca, Spain.
- 15/11/2016 Odd-frequency superconductivity at the edge of a 2D topological insulator without ferromagnets. WE-Heraeus-Seminar on Trends in Mesoscopic Superconductivity. Bad Honnef, Germany.
- 13/12/2015 Majorana bound states from exceptional points in non-topological superconductors. Arctic school on open quantum systems. Kilpisjärvi Biological Station, University of Helsinki. Finland.
- 14/09/2015 SNS junctions in nanowires with spin-orbit coupling: role of confinement and helicity on the sub-gap spectrum. Workshop on Quantum transport in one dimension. Max Planck Institute for Complex Systems, Dresden, Germany
- 31/08/2015 SNS junctions in nanowires with spin-orbit coupling: role of confinement and helicity on the sub-gap spectrum. Workshop on Quantum transport in one dimension and School on Topological phases of matter. The Arnold Sommerfeld Center for Theoretical Physics, Munich, Germany
- 19/12/2014 SNS junctions in nanowires with spin-orbit coupling: role of confinement and helicity on the sub-gap spectrum. XVII Young Researchers Meeting, Universidad Autónoma de Madrid, Madrid, Spain.
- 29/06/2014 MAR and critical current in topological superconducting nanowire junctions. School on Quantum Effects in Low-dimensional Systems. QDev, Niels Bohr Institute, Copenhagen, Denmark.
- 22/01/2014 MAR and critical current in topological superconducting nanowire junctions. Meeting of the Spanish Solid State Physics Group, Ciudad Real, Spain.

22/01/2014	Andreev levels and Josephson current in topological superconducting nanowire junctions. Meeting of the Spanish Solid State Physics Group, Ciudad Real, Spain.
19/11/2013	MAR and critical current in topological superconducting nanowire junctions. WE-Heraeus-Seminar on Superconducting Proximity and Josephson Effects in Nanoscale Systems. Bad Honnef, Germany.
02/09/2013	MAR and critical current in topological superconducting nanowire junctions. Les Houches doctoral training session: Frontiers of Condensed Matter: Nanosciences and Energy. Les Houches, France.
03/06/2013	MAR and critical current in topological superconducting nanowire junctions. Workshop on New Trends in Topological Insulators. ICN2. Sant Feliu de Guixols, Barcelona, Spain.

SUPERVISION

Bachelor	2. Erik Hjortsäter, Daniel Westman, Lovisa Gustafsson, Albin Danielsson: Nonlocal Josephson effect in Kitaev chains. Uppsala University. 01/04/2026-present. <i>Role</i> : Main supervisor
	1. Emilia Walfridsson, Emmy Salven: Spin-polarized Cooper pairs with unconventional magnets. Uppsala University. 23/03/2025-30/07/2025. <i>Role</i> : Main supervisor
Master	6. D. Pratap Singh and R. Felix Alcantara Tangonan: Detecting odd-frequency pairing in minimal Kitaev chains. Uppsala University. 01/11/2025-present. <i>Role</i> : Main supervisor
	5. Abbe Tanndal: Nonlocal Josephson phenomena in junctions with conventional superconductors. Uppsala University. 23/03/2025-present. <i>Role</i> : Main supervisor
	4. Oscar Törnquist: Quantum simulation of minimal Kitaev chains. Uppsala University. 20/01/2025-30/07/2025. <i>Role</i> : Main supervisor
	3. Jakob Grunditz: Floquet engineering topological phases. Uppsala University. 01/09/2024-23/04/2025. <i>Role</i> : Main supervisor
	2. Lucas Baldo Mesa: Majorana fermions in semiconductor-quantum dot devices. Uppsala University. 01/01/2020-29/06/2020. <i>Role</i> : Main supervisor
	1. Athanasios Tsintzis: Odd-frequency superconducting pairing in Kitaev-based junctions. Uppsala University. 01/09/2017-21/08/2018. <i>Role</i> : Main supervisor
PhD	2. Florian Kayatz: Superconducting spintronics. Uppsala University. 15/08/2023-present. <i>Role</i> : Co-supervisor
	1. Oladunjoye A. Awoga: Quantum transport in topological superconducting junctions. Uppsala University. 24/05/2017-01/09/2019. <i>Role</i> : Supervisor of 2 projects
Postdoc	2. Sayan Mondal: Floquet engineering and diode effects. Uppsala University. 01/03/2024-28/02/2026. <i>Role</i> : Main supervisor
	1. Vimal Vimal: Entanglement measures in Majorana systems. Uppsala University. 01/06/2023-28/07/2025. <i>Role</i> : Main supervisor

TEACHING

03/26 - present	Lecturer , Superconductivity and Applications to Quantum Technology (5 ECTS), Uppsala University, Sweden
11/25 - present	Lecturer , Quantum Materials II (5 ECTS), Uppsala University, Sweden
08/22 - present	Teaching assistant , Quantum Physics (10 ECTS), Uppsala University, Sweden
09/08 - 12/10	Teacher , Physics and Informatics, Primary School “Intelekt”, Bratislava, Slovakia
03/05 - 05/05	Teaching assistant , labs of Physics, Peruvian Society of Physics, Peru
08/04 - 07/05	Teaching assistant , labs of Physics, Universidad Nacional de San Marcos, Peru
Teacher training: More than 10 weeks of pedagogical courses, including teacher and PhD supervision training as well as training on course development	

OTHER PROFESSIONAL ACTIVITIES

Expert reviewer	<i>Journals:</i> Nano Letters, Advanced Science, npj Quantum Information, Physical Review X, Physical Review Letters, Communications Physics, SciPost, Physical Review B, New Journal of Physics, Europhysics Letters, European Physical Journal B, Journal of the Physical Society of Japan <i>Grant proposals:</i> Icelandic Research Fund (since 8/22), US Department of Energy (since 02/24)
Outreach	Founder of Educaserío : platform that promotes education and science in rural areas of Peru
Student examination	<i>Licentiate opponent:</i> Lukas Rødland, Stockholm University, Sweden, 2023. <i>Subject reader:</i> Qi Wu, Uppsala University, Sweden, 2026.

GRANTS, AWARDS, AND PRIZES

28/01/2026	Research grant awarded by the Olle Engkvist Foundation, Sweden
13/04/2024	Travel grant awarded by the Sweden-Japan Foundation, Sweden
2023	Emerging Leader 2022 , awarded by Journal of Physics: Condensed Matter
12/12/2023	IoP Trusted reviewer , awarded by awarded by the Institute of Physics, IoP Publishing
30/11/2022	WISE Ph.D. student project , Wallenberg Initiative Materials Science for Sustainability. Co-PI. Main PI: A. M. Black-Schaffer.
10/11/2022	Grant for postdoc , awarded by Carl Trygger's Foundation.
23/11/2022	Travel grant awarded by The Royal Swedish Academy of Sciences, call Physics 2022.
05/08/2022	JSPS Visiting researcher grant , awarded by the Japanese Society for Physical Sciences.
08/04/2022	Research travel grant awarded by the Scandinavia-Japan Sasakawa Foundation.
01/04/2022	The Göran Gustafsson prize for young researchers , awarded by the Göran Gustafsson Foundation.
04/11/2021	VR Starting grant (Etableringsbidrag) awarded by Swedish Research Council (Vetenskapsrådet): Individual grant to start my own group at Uppsala University. Funding period: 2022-2025.
12/02/2020	Travel grant awarded by C.F. Liljewalchs stipendiestiftelse Foundation.

20/03/2019	Travel grant awarded by C.F. Liljewalchs stipendiestiftelse Foundation.
17/04/2018	Travel grant awarded by Letterstedts resestipendium Foundation and The Royal Swedish Academy of Sciences, call Physics 2018.
01/05/2014	Travel grant awarded by Spanish Research Council.
03/06/2011	Jae Predoc Fellowship awarded by Spanish Research Council. For a 4 years PhD at the Materials Science Institute of Madrid, Spanish Research Council, Spain.
01/09/2009	Scholarship awarded by the University of Vienna and The Erwin Schödinger Institute. For training Course: Classical and Quantum Aspects of Cosmology during Sep-Oct. Vienna.
28/04/2010	Dean Prize and Laureate awarded by Comenius University. 1st and 3rd places at the Student Science Conference, Bratislava, Slovakia. [Two works presented]
24/04/2009	Dean Prize awarded by Comenius University. 1st place at the Student Science Conference, Bratislava, Slovakia.
01/06/2008	Studentship awarded by Slovak Academy of Sciences. For a summer stay at the Institute of Physics, Bratislava, Slovakia.
25/04/2008	Laureate awarded by Comenius University. Third place at the Student Science Conference, Bratislava, Slovakia.
28/07/2005	Scholarship awarded by the Slovak Ministry of Education, Science, Research and Sport. For language preparation, Bachelor's and Master's studies in Slovakia.

REFERENCES

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