

# Alba Cervera-Lierta | Full CV

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## Education

<b>Doctor of Philosophy (PhD) in Physics</b> <i>Supervisor: Dr. José Ignacio Latorre</i> Title: Maximal Entanglement: Applications to Quantum Computation and Particle Physics.	<b>Universitat de Barcelona</b> 2015 – 2019
<b>Master in Astrophysics, Particle Physics and Cosmology</b> <i>Specialized in Particle Physics and Gravitation.</i> Thesis title: Non-unitary neutrino oscillations.	<b>Universitat de Barcelona</b> 2014 – 2015
<b>Bachelor in Physics</b> <i>Specialized in Fundamental Physics</i> Thesis title: Scaling of entanglement support for iTEBD algorithm.	<b>Universitat de Barcelona</b> 2009 – 2014

## Positions

<b>Research</b> .....	
<b>Senior Researcher</b> <i>Quantic group (CASE department), Ramón y Cajal fellow since 2024.</i>	<b>Barcelona Supercomputing Center</b> 2021 – Present
<b>Postdoctoral Fellow</b> <i>Alán Aspuru-Guzik group</i>	<b>University of Toronto</b> 2019 – 2021
<b>Technical Researcher</b> <i>Quantic group (CASE department)</i>	<b>Barcelona Supercomputing Center</b> 2017 – 2019
<b>Specialized Technician</b> <i>Project: "Entanglement, tensor networks and cold gases"</i>	<b>Universitat de Barcelona</b> 2014
<b>Coordinator</b> .....	
<b>EuroQCS-Spain project</b> <i>Quantum computing technology responsible (budget: 12,5 M €)</i>	<b>Barcelona Supercomputing Center</b> 2022 – Present
<b>Quantum Spain project</b> <i>Project Principal Investigator (budget: 22M €)</i>	<b>Barcelona Supercomputing Center</b> 2021 – Present
<b>Visitor</b> .....	
<b>Center of Quantum Technologies</b> <i>Prof. Kwek Leong Chuan group.</i>	<b>National University of Singapore</b> May 2017
<b>Instituto de Física Teórica</b> <i>Dr. César Gómez's group.</i>	<b>CSIC</b> Feb 2017
<b>Grupo de investigación en Información y Computación Cuántica</b> <i>Dr. Vicente Martín group</i>	<b>Universidad Politécnica de Madrid</b> Sep 2016
<b>Rudolph Pierls Institute for Theoretical Physics</b> <i>Dr. Juan Rojo's group.</i>	<b>University of Oxford</b> Jan - May 2016

## Funded projects

### European

**EuroQHPC-Integration project** **EuroHPC - Joint Undertaking**  
*Budget: 745.200 €(WP), Role: EuroQCS-Spain consortia coordinator.* 2025 – 2029

### National

**Logic Artificial Intelligence for Photonics (LOGITONICS)** **Agencia Estatal de Investigación (AEI)**  
*Budget: 75k €, Role: principal investigator.* 2024 – 2028

**Ramón y Cajal fellowship** **Agencia Estatal de Investigación (AEI)**  
*Budget: 50k €, Tenure track position.* 2024 – 2029

**Quantum Spain project** **Secretary of State of Digitalization and AI (SEDIA)**  
*Budget: 22M €, Role: principal investigator* 2021 – 2025  
<https://quantumspain-project.es>

### Industry

**Quantum Experience for Academic Research Program** **IBM**  
*Funding: Exclusive access to pulse-level control of IBM quantum devices, Role: co-PI.* 2021 – 2022  
Project: High-dimensional quantum experiments superconducting circuits.

## Awards and Honors

**DonaTIC Revelació** **Generalitat de Catalunya**  
October 2025

**DTIC - Ingenierías UPF research award for women researchers** **Universitat Pompeu Fabra**  
May 2024

**PhD Excellent Cum Laude** **Universitat de Barcelona**  
Jun 2019

**Teach Me QISKit Award** **IBM**  
Jun 2018

## Publications

Link to [Google Scholar](#) and [OrcID](#).

**20. Distributed Quantum Circuit Cutting for Hybrid Quantum-Classical HPC** **Preprint**  
*M. Tejedor, B. Casas, F. Conejero, A. Cervera-Liarta, R. Badia* 2025  
arXiv:2505.01184v1 [cs.DC].

**19. Universality of entanglement in gluon dynamics** **Preprint**  
*C. Núñez, A. Cervera-Liarta, J. I. Latorre* 2025  
arXiv:2504.15353v1 [hep-th].

**18. Quantum Circuits for High-Dimensional Absolutely Maximally Entangled States** **Preprint**  
*B. Casas, G. Rajchel-Mieldzioć, S. Ahmad Rather, M. Płodzień, W. Bruzda,* 2025  
*A. Cervera-Liarta, K. Życzkowski,* arXiv:2504.05394 [quant-ph].

**17. Multidimensional Fourier series with quantum circuits** **Phys. Rev. A**  
*B. Casas, A. Cervera-Liarta* 2023  
Physical Review A 107, 062612 (2023).

**16. Design of quantum optical experiments with Logic Artificial Intelligence** **Quantum**  
*A. Cervera-Liarta, M. Krenn, A. Aspuru-Guzik* 2022  
Quantum 6, 836 (2022).

**15. On scientific understanding with artificial intelligence** **Nat. Rev. Phys.**  
*M. Krenn, R. Pollice, S. Y. Guo, et. al.* 2022  
Nature Review Physics (2022).

- 14. Toward Reliability in the NISQ Era: Robust Interval Guarantee for Quantum Measurements on Approximate States** Phys. Rev. Research  
2022  
*M. Weber, A. Anand, A. Cervera-Liarta, J. S. Kottmann, T. H. Kyaw, et. al.*  
Physical Review Research **4**, 033217 (2022).
  - 13. Programming Physical Quantum Systems with Pulse-Level Control** Front. Phys.  
2022  
*K. N. Smith, G. S. Ravi, T. Alexander, et. al.*  
Frontiers in Physics, **672** (2022).
  - 12. Learning Interpretable Representations of Entanglement in Quantum Optics Experiments using Deep Generative Models** Nat. Mach. Intell.  
2021  
*D. Flam-Shepherd, T. Wu, X. Gu, A. Cervera-Liarta, M. Krenn, A. Aspuru-Guzik*  
Nature Machine Intelligence **4** (6), 544-554 (2022).
  - 11. Experimental high-dimensional Greenberger–Horne–Zeilinger entanglement with superconducting transmon qutrits** Phys. Rev. Appl.  
2022  
*A. Cervera-Liarta, M. Krenn, A. Aspuru-Guzik, A. Galda*  
Physical Review Applied **17**, 024062 (2022).
  - 10. Noisy intermediate-scale quantum algorithms** Rev. Mod. Phys.  
2022  
*K. Bharti, A. Cervera-Liarta, T. H. Kyaw, T. Haug, et. al.*  
Review of Modern Physics **94**, 015004 (2022).
  - 9. The Meta-Variational Quantum Eigensolver (Meta-VQE): Learning energy profiles of parameterized Hamiltonians for quantum simulation** PRX Quantum  
2021  
*A. Cervera-Liarta, J. S. Kottmann and A. Aspuru-Guzik*  
PRX Quantum **2**, 020329 (2021).
  - 8. Tequila: A platform for rapid development of quantum algorithms** Quantum Sci. Technol.  
2021  
*J. S. Kottmann, S. Alperin-Lea, T. Tamayo-Mendoza, A. Cervera-Liarta et. al.*  
Quantum Science and Technology **6** 024009 (2021).
  - 7. Data Re-uploading for a Universal Quantum Classifier** Quantum  
2020  
*A. Pérez-Salinas, A. Cervera-Liarta, E. Gil-Fuster, J. I. Latorre*  
Quantum **4**, 226 (2020).
  - 6. Maximal Entanglement: Applications in Quantum Information and Particle Physics** PhD Thesis  
2019  
*A. Cervera-Liarta*  
arXiv:1906.12099 [quant-ph].
  - 5. Quantum Circuits for Maximally Entangled States** Phys. Rev. A  
2019  
*A. Cervera-Liarta, J. I. Latorre, D. Goyeneche*  
Physical Review A **100**, 022342 (2019).
  - 4. Exact Ising Simulation on a Quantum Computer** Quantum  
2018  
*A. Cervera-Liarta*  
Quantum **2**, 114 (2018).
  - 3. Multipartite Entanglement in Spin Chains and the Hyperdeterminant** J. Phys. A Math. Theor.  
2018  
*A. Cervera-Liarta, A. Gasull, J. I. Latorre and G. Sierra.*  
Journal of Physics A: Mathematical and Theoretical **51**, 505301 (2018).
  - 2. Maximal Entanglement in High Energy Physics** SciPost Phys.  
2017  
*A. Cervera-Liarta, J. I. Latorre, J. Rojo and L. Rottoli*  
SciPost Physics **3**, 036 (2017).
  - 1. Operational Approach to Bell Inequalities: Application to qutrits** Phys. Rev. A  
2016  
*D. Alsina, A. Cervera, D. Goyeneche, J. I. Latorre and K. Zyczkowski*  
Physical Review A **94**, 032102 (2016).
- Reports and white papers**.....
- When matter and information merge into “Quantum”** Commun. Phys.  
2023  
*R. Aguado, A. Cervera-Liarta, A. Correia, et. al., Communications Physics 6(1) 266 (2023).*
  - Workflows Community Summit 2022: A Roadmap Revolution** Technical Report  
2023  
*R. Ferreira da Silva, R. M. Badia, V. Bala, et. al.*  
ORNL/TM-2023/2885, arXiv:2304.00019 [cs.DC].

## Books, chapters and notes.....

- Machine learning in quantum sciences** Cambridge University Press  
*A. Dawid, J. Arnold, B. Requena, et. al.* 2025  
Cambridge University Press 2025, arXiv:2204.04198 [quant-ph].
- Simulation of the 1d XY model on a quantum computer** SciPost Phys. Lect. Notes  
*M. Farreras, A. Cervera-Lierta* 2025  
SciPost Physics Lecture Notes **95** (2025).

## Software development.....

### Libraries:

- Distributed quantum circuit cutting library "Qdislib"** Python  
*Project collaborator, <https://qdislib.readthedocs.io/>* 2025
- Quantum computing open-source library "Tequila"** Python  
*Project collaborator, <https://github.com/tequilahub/>* 2021
- Codes and demos:
- Logic AI algorithm "Klaus"** Mathematica  
*Creator and developer, <https://github.com/AlbaCL/Klaus>* 2022
- Meta Variational Quantum Eigensolver** Python  
*Co-creator and developer., <https://github.com/aspuru-guzik-group/Meta-VQE>* 2021

## Talks and seminars.....

Some of my talks' videos are listed in my [Youtube Channel playlists](#).  
Virtual talks due to COVID-19 pandemic.

### Keynote.....

- Lliçó Innaugural** UPF  
*"Tecnologies quàntiques: passat, present i futur d'una (r)evolució tecnològica"* Sep 30 2024  
Enginyeries Universitat Pompeu Fabra.
- 100tífiques** UPC  
*"Tecnologies quàntiques: passat, present i futur d'una (r)evolució tecnològica"* Feb 1 2024  
Fundació Catalana per a la Recerca i la Innovació.
- The quest for the quantum computer** 10<sup>th</sup> BSC Doctoral Symposium  
*Barcelona, Spain* May 9, 2023
- The Noisy Intermediate-Scale Quantum era** CARLA 2022  
*Porto Alegre, Brasil* Sep 28-30, 2022
- Margarita Salas Honoris Causa PhD act** Universidad de Extremadura  
*"De las computadoras a los ordenadores"* Feb 2 2019

### Colloquium.....

- Computación cuántica: pasado, presente y futuro de una revolución tecnológica** Universidad de Alicante  
*Opening academic year Aula de Ciencia y Tecnología, Universidad de Alicante, Spain.* Sep 28, 2023
- Tecnologies quàntiques: present i futur** ICCUB Colloquia  
*Universitat de Barcelona, Spain.* Feb 16, 2022

### Invited.....

- A quantum computer decalogue** Maó, Spain.  
*XL Trobades de la Mediterrània* Oct 15, 2025
- Quantum-HPC integration: challenges and opportunities** Delft, The Netherlands.  
*SQA 2025* Aug 26, 2025

<b>Quantum computers: the new supercomputer partition</b> <i>HiPEAC 2025, Classical HPC &amp; QC: the way to foster the integration workshop</i>	<b>Barcelona, Spain.</b> <i>Jan 20, 2025</i>
<b>Quantum computers: the new supercomputer partition</b> <i>SC24</i>	<b>Atlanta, USA</b> <i>Nov 20, 2024</i>
<b>Design of quantum optical experiments with logic artificial intelligence</b> <i>SCOP24</i>	<b>ICFO, Barcelona</b> <i>Oct 3, 2024</i>
<b>Building the Spanish Quantum Computer</b> <i>Quantum Technologies in Europe, Madrid, Spain</i>	<b>Quanteria</b> <i>Nov 23, 2023</i>
<b>Quantum-HPC integration: challenges and opportunities</b> <i>EQTC 2023</i>	<b>Hannover, Germany</b> <i>Oct 19, 2023</i>
<b>Variational Quantum Algorithms</b> <i>QTYR 2023</i>	<b>CSIC, Madrid</b> <i>Jul 04, 2023</i>
<b>Quantum Spain in the NISQ era</b> <i>QBN Meeting on Quantum Computing and Applications</i>	<b>BSC-CNS</b> <i>Jun 15, 2023</i>
<b>High-dimensional quantum computation: opportunities and challenges</b> <i>Symposium on Open-Source Tools for Quantum Computing &amp; Simulation</i>	<b>ICFO</b> <i>Mar 31, 2023</i>
<b>High-dimensional quantum computation</b> <i>CERN</i>	<b>QT4HPC</b> <i>Nov 2, 2022</i>
<b>Quantum algorithms in near term devices</b> <i>IQTC, University of Barcelona (Spain).</i>	<b>New Trends in Computational Chemistry</b> <i>Sep 9, 2022</i>
<b>Quantum Spain</b> <i>Barcelona (Spain).</i>	<b>Quantum 2022</b> <i>Jun 22, 2022</i>
<b>Quantum Spain: un impulso para el ecosistema de computación cuántica</b> <i>NASERTIC, Pamplona (Spain).</i>	<b>Jornada cuántica</b> <i>May 4, 2022</i>
<b>Quantum Spain: un impulso para el ecosistema de computación cuántica</b> <i>SCAYLE, León (Spain).</i>	<b>Jornada Eco. Cuántico</b> <i>Mar 1, 2022</i>
<b>Near term quantum computation: opportunities and challenges</b> <i>Bilbao (Spain).</i>	<b>Quantum 2021</b> <i>Nov 24, 2021</i>
<b>Noisy Intermediate-Scale Quantum era</b> <i>Virtual (*).</i>	<b>JURES 2021</b> <i>Sep 17, 2021</i>
<b>Noisy Intermediate-Scale Quantum algorithms</b> <i>Perspectives on Quantum Sensing and Computation for Particle Physics. Virtual (*).</i>	<b>CERN</b> <i>Jul 15, 2021</i>
<b>The Meta-Variational Quantum Eigensolver</b> <i>Virtual (*).</i>	<b>Machine Learning for Quantum X</b> <i>Jul 6, 2021</i>
<b>The Meta-Variational Quantum Eigensolver</b> <i>Virtual (*).</i>	<b>QWorld Quantum Science Days</b> <i>Jun 1, 2021</i>
<b>Chronicles of Entangland, the foundation of the SC town</b> <i>Virtual (*).</i>	<b>Qiskit Hackathon Europe</b> <i>May 26, 2021</i>
<b>Experimental high-dimensional GHZ entanglement with <i>superconducting transmon qutrits</i></b> <i>Chicago. Virtual (*).</i>	<b>Pulse-level Quantum Control Workshop</b> <i>May 18, 2021</i>
<b>Maximal Entanglement in High Energy Physics</b> <i>Topical Group on Hadronic Physics. Virtual (*).</i>	<b>APS April Meeting</b> <i>Apr 15, 2021</i>
<b>Noisy Intermediate-Scale Quantum algorithms</b> <i>Virtual (*).</i>	<b>Universidad Iberoamericana</b> <i>Apr 13, 2021</i>
<b>Please, feed the quantum troll!</b> <i>Virtual (*).</i>	<b>Q-Hack 2021</b> <i>Feb 19, 2021</i>

<b>Testing and designing quantum algorithms for the NISQ era</b> <i>Quantum Computing and Simulation on Near-Term Devices. Virtual (*).</i>	<b>INT-20-3</b> Nov 21, 2020
<b>Maximal Entanglement in High Energy Physics, Quantum Entanglement at Collider Energies</b> <i>Stony Brook (United States).</i>	<b>CFNS Stony Brook</b> Sep 11, 2018
<b>Exact simulation of a Quantum Phase Transition on a quantum computer</b> <i>Barcelona (Spain).</i>	<b>Quantum Phase Transitions</b> Apr 05, 2018
<b>Emergence of Gauge Symmetry from a Maximal Entanglement Principle</b> <i>Madrid (Spain).</i>	<b>Universidad Complutense de Madrid</b> Sep 21, 2016
<b>Contributed</b> .....	
<b>The Meta-Variational Quantum Eigensolver</b> <i>Virtual (*).</i>	<b>APS March Meeting 2021</b> Mar 18, 2021
<b>Data re-uploading for a universal quantum classifier</b> <i>Virtual (*).</i>	<b>Q-Turn 2020</b> Nov 24, 2020
<b>Data re-uploading for a universal quantum classifier</b> <i>Quantum Techniques Machine Learning. Virtual (*).</i>	<b>QTML 2020</b> Nov 12, 2020
<b>Maximal Entanglement in Quantum Computation</b> <i>Barcelona (Spain).</i>	<b>BSC Severo Ochoa Doctoral Symposium</b> May 07, 2019
<b>Seminars</b> .....	
<b>Ordenadores cuánticos: la nueva partición de los superordenadores</b> <i>Ciclo de charlas por el Año Internacional de la Ciencia y Tecnología Cuántica.</i>	<b>Universidad de Sevilla</b> May 14, 2025
<b>Computació quàntica: reptes i oportunitats</b> <i>FIB</i>	<b>UPC</b> Mar 11, 2025
<b>The Noisy Intermediate-Scale Quantum Computation</b> <i>IQCC</i>	<b>Universitat de Girona</b> Jan 21, 2025
<b>Computación cuántica: pasado, presente y futuro de una revolución tecnológica</b> <i>Madrid, Spain</i>	<b>Telefónica</b> Feb 21, 2024
<b>Quantum-HPC integration: challenges and opportunities</b> <i>Toronto, Canada</i>	<b>LG Toronto</b> Oct 26, 2023
<b>Quantum Spain: creating a public quantum-HPC infrastructure</b> <i>European Comission (Virtual).</i>	<b>Quantum Cafe</b> Sep 21, 2023
<b>A roadmap to quantum computing integration into HPC infrastructures</b>	<b>RISC2 Seminar Series</b> Mar 15, 2023
<b>Noisy Intermediate Scale Quantum Computation</b> <i>Dept. Condensed Matter Physics.</i>	<b>Universidad de Zaragoza</b> Jun 3, 2022
<b>Noisy Intermediate Scale Quantum Computation</b> <i>Virtual.</i>	<b>Universidad Nacional de Colombia</b> Apr 21, 2022
<b>Design of quantum optical experiments with logic artificial intelligence</b> <i>Quantum Optics group seminar.</i>	<b>MPQ</b> Oct 29, 2021
<b>High-dimensional quantum computing experiments</b> <i>Prof. Manas Mukherjee group meeting (Singapore, Virtual *)</i>	<b>CQT</b> Aug 03, 2021
<b>Maximal Entanglement in a Quantum Computer</b> <i>Fermilab theory seminars. Virtual (*)</i>	<b>Fermilab</b> Jun 15, 2021
<b>The Meta-Variational Quantum Eigensolver</b> <i>Oxford Quantum Information Society. Virtual (*)</i>	<b>Oxford</b> May 20, 2021

<b>The Meta-Variational Quantum Eigensolver</b> <i>Virtual.</i>	<b>Scientific Machine Learning Webinars</b> <i>May 6, 2021</i>
<b>Noisy Intermediate-Scale Quantum algorithms</b> <i>Hypatia Series. Virtual(*).</i>	<b>Alexandria University</b> <i>Apr 8, 2021</i>
<b>Maximal Entanglement in High Energy Physics</b> <i>Nuclear Theory series. Virtual(*).</i>	<b>University of Maryland</b> <i>Apr 2, 2021</i>
<b>Noisy Intermediate-Scale Quantum algorithms</b> <i>Belgian Quantum Physics Initiative. Virtual(*).</i>	<b>Académie Royale de Belgique</b> <i>Mar 4, 2021</i>
<b>Designing VQA with Tequila</b> <i>Virtual.</i>	<b>Quantum Conversations by the Bay</b> <i>Nov 28, 2020</i>
<b>Maximal Entanglement. Applications to Quantum Computation and Particle Physics</b> <i>Matterlab group meeting. Toronto (Canada).</i>	<b>UofT</b> <i>Mar 1, 2029</i>

## Panels and round tables

### As a moderator

<b>Round table Industrial forum</b> <i>Participants: Marta Estarellas, Richard Kienhoefer, Pascale Senellart, Fernando de la Iglesia and Bilal Kalyoncu</i>	<b>Quantum Matter 2023</b> <i>May 24, 2023</i>
<b>Round table Industrial forum</b> <i>Participants: Marc Almendros, Niels Bultink, Gianni del Bimbo, Daniel Szombati, Yonatan Cohen, Josep M. Martorell, Heike Riel and Carmen Palacios.</i>	<b>Quantum Matter 2022</b> <i>Jun 22, 2022</i>

### As a participant

<b>Quantum computing + Communications: meet at the halfway.</b> <i>Pannel with Hugues de Riedmatten.</i> Moderated by Carmen G. Almudéver.	<b>PuzzleX</b> <i>Oct 7, 2022</i>
<b>Catalan Nanotech Ecosystem Session</b> <i>Moderated by Stephan Roche.</i>	<b>ACM Nanocomm</b> <i>Oct 7, 2022</i>
<b>Women in ACM/IEEE WICE Luncheon</b> <i>Moderated by Núria Castell.</i>	<b>ACM Nanocomm</b> <i>Oct 6, 2022</i>
<b>Quantum Computing: Changing the Course of Industry</b> <i>Round table with Carlos Kuchkovsky, Marta Pita, and Enrique Sanchez.</i> Moderated by Jaime Gómez.	<b>Barcelona New Economy Week</b> <i>Oct 3, 2022</i>
<b>Quantum Technologies</b> <i>Panel with Silvia Carrasco, Carlos Abellán and Enrique Mora.</i> Moderated by Rubén Criado	<b>Barcelona Deep Tech Summit</b> <i>Sep 22, 2022</i>
<b>The Impact of Advanced Computing in AI</b> <i>Round table with Jean Pierre Panziera and Nicolas Moes.</i> Moderated by David Pringle	<b>Science Business</b> <i>Sep 19 2022</i>
<b>The Future of HPC</b> <i>Panel with Paul Messina, Per Stenström, Uri Weiser and Min Li.</i> Moderated by Josephine Wood	<b>ACM Europe Summer School</b> <i>Sep 2 2022</i>
<b>Young People Program Career Panel</b>	<b>DATE 2022</b> <i>Mar 21 2022</i>
<b>Quantum Software Ecosystem</b> <i>Pannel discussion with industry and academic members</i>	<b>IEEE Services</b> <i>Sep 9 2021</i>



## Committees and referee

### National

**Vice-president** Real Sociedad Española de Física  
*Grupo Especializado en Información y Tecnologías Cuánticas (GEITC).* 2023 - Present

### European

**Quantum Computing working group** European Quantum Flagship and EuroHPC  
*Quantum Coordination Board* 2023 - Present

**Quantum Standarization working group** European Quantum Flagship and EuroHPC  
*Quantum Coordination Board* 2023 - Present

**Quantum - HPC Working group** European Quantum Flagship  
2022 - Present

### Scientific Advisory Board

**Finish Quantum Initiative** CSC, Aalto University, VTT  
2023 - Present

**Consell de les Tecnologies Quàntiques de Catalunya** Generalitat de Catalunya  
*Board member* 2022 - 2024

### Scientific Committee

Quantum Techniques in Machine Learning 2025, Singapore.  
Quantum Techniques in Machine Learning 2023, CERN.  
ICE8 2023, Santiago de Compostela.  
Quantum Matter 2023, Madrid.  
Quantum Matter 2022, Barcelona.  
Quantum Techniques in Machine Learning 2020, Virtual.

### Peer-review and referee

**Journals:** Nature Communications, Nature Machine Intelligence, Physical Review A, Advanced Quantum Technologies, Quantum, New Journal of Physics, Quantum Information Processing.

**Project agencies:** QuantERA, Agencia Española de Investigación.

**Access committee:** CESGA quantum computing access.

### PhD Thesis committees

**Quantum Adventures From Analog to Digital: Gauge, Scars and Laughlin** U. Politècnica de Catalunya  
*Barbara Andrade Dos Santos* May 19, 2025  
Supervisors: Maciej Lewenstein, Tobias Graß

**Memory Management in Software Quantum Computing Simulators** U. Industrial de Santander  
*Gilberto Díaz* Dec 9, 2024  
Supervisors: C. Jaime Barrios Hernández, L. Angelo Steffenel, J. F. Couturier

**Quantum many-body ground states via digital quantum simulation** Universidade do Minho  
*Bruno Rodrigues Pacheco e Murta* Feb 29, 2024  
Supervisors: Joaquín Fernández-Rossier, Nuno Miguel Machado Reis Peres

**Reservoir Computing in Quantum Systems** Universitat de les Illes Balears  
*Rodrigo Martínez Peña* Sep 7, 2023  
Supervisor: Roberta Zambrini, Miguel Cornelles Soriano

**Fault tolerant quantum algorithms** Universidad Complutense de Madrid  
*Pablo Moreno-Casares* Jan 17, 2023  
Supervisor: Miguel Ángel Martín-Delgado

**Quantum information in lattices** Universitat Autònoma de Barcelona  
*Bruna Gabrielly De Moraes Araújo* Jul 22, 2022  
Supervisors: Antonio Acín dal Maschio, Daniel Cavalcanti Santos and Stephan Jean Louis Roche



## Conference and seminars organization

<b>Spring School on Near-Term Quantum Computing</b> <i>Co-organizer. Centro de Ciencias de Benasque Pedro Pascual.</i>	<b>Benasque, Spain.</b> <i>Apr 14-27, 2024</i>
<b>Quantum Matter International Conference</b> <i>Industrial forum co-organizer.</i>	<b>Madrid</b> <i>May 22-25, 2023</i>
<b>Quantum Research Seminars Toronto.</b> <i>Co-organizer and chair. Youtube: Quantum Research Seminars Toronto.</i>	<b>Virtual</b> <i>2020 – 2021</i>

## Teaching

### Lectures and courses.....

<b>A gentle introduction to quantum computing</b> <i>ACM Europe Summer School on HPC</i> The quest for the quantum computer	<b>ACM Europe, Barcelona</b> <i>July 7, 2023</i>
<b>A gentle introduction to quantum computing</b> <i>ACM Europe Summer School on HPC</i>	<b>ACM Europe, Barcelona</b> <i>July 7, 2023</i>
<b>Quantum Algorithms I and II</b> <i>Spring School on Superconducting Qubit Technology</i>	<b>Centro de Ciencias de Benasque Pedro Pascual</b> <i>Apr 11-21, 2023</i>
<b>The Noisy Intermediate Scale Quantum Computation</b> <i>Escenarios Científicos</i>	<b>Universidad Complutense de Madrid</b> <i>Mar 14, 2023</i>
<b>The Noisy Intermediate Scale Quantum Computation</b> <i>Master Modelling for Science and Engineering Research and Innovation</i>	<b>Universitat Autònoma de Barcelona</b> <i>Oct 4, 2022</i>
<b>Variational Quantum Computing</b> <i>IV Summer School on Quantum Computing</i>	<b>Universidad Internacional Menéndez-Pelayo</b> <i>Sep 5-9, 2022</i>
<b>Near-term quantum computing</b> <i>Clase introducción al curso en Quantum Computing software.</i>	<b>Universidad Castilla La-Mancha</b> <i>Jun 20, 2022</i>
<b>NISQ computing</b> <i>Theory lectures</i>	<b>Institut de Ciències Fotòniques (ICFO)</b> <i>Mar 15-24, 2022</i>
<b>Variational Quantum Computing</b> <i>III Summer School on Quantum and Q-Inspired Computing</i>	<b>Universidad Internacional Menéndez-Pelayo</b> <i>Sep 7, 2021</i>
<b>Noisy Intermediate-Scale Quantum Algorithms</b> <i>Summer School "Machine Learning in Quantum Physics and Chemistry"</i>	<b>Warsaw, Poland</b> <i>Aug 25, 2021</i>
<b>Quantum Computing in the NISQ era</b> <i>Talk in Quantum Technologies Winter School</i>	<b>UCL</b> <i>Dec 10, 2020</i>
<b>Bojos per la Supercomputació</b> <i>Introductory course in quantum computation for high-school students</i>	<b>BSC</b> <i>26 Apr – 04 May, 2019</i>
<b>The Quantum Revolution</b> <i>Seminar at Master in Finance</i>	<b>ESADE Business School</b> <i>Jun 07, 2018</i>

### Teaching positions.....

<b>Teacher Assistant</b> <i>Calculus I-II, Theoretical Mechanics, Physics I - II.</i>	<b>Universitat Autònoma de Barcelona</b> <i>2017 – 2019</i>
<b>Teacher Assistant</b> <i>Modern Physics Laboratory, Computational Physics.</i>	<b>Universitat de Barcelona</b> <i>2016 – 2017</i>

## Students

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### PhD

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**Todor Krasmirov**

**Universitat de Barcelona**

*Oct 2025 – Present*

**Francesco Aldo Venturelli**

**Universitat Pompeu Fabra**

*Co-supervised with Miguel Ángel González Ballester*

*Nov 2024 – Present*

**Berta Casas Font**

**University of Barcelona**

*Co-supervised with Artur Garcia*

*Sep 2022 – Present*

### Master

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**Mar Tejedor Ninou**

**University of Barcelona**

*Distributed Circuit Cutting for Hybrid Quantum-HPC Systems*

*Feb 2025 – Jul 2025*

*Co-supervised with Rosa Badia. Master Quantum Science and Technology.*

**Juan Francisco Martín Bravo**

**University of Barcelona**

*Quantum benchmarking: entanglement measures in a quantum computer*

*Feb 2023 – Jul 2023*

*Master Quantum Science and Technology.*

**Berta Casas Font**

**University of Barcelona**

*Quantum function fitting and classification beyond the single-qubit model*

*Feb 2022 – Jul 2022*

*Master Quantum Science and Technology.*

### Internships

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**Francesc Sabater Garcia**

**University of Barcelona**

*Adding Qibo as a Supported Framework for Mitiq*

*Sep 2023 – Feb 2024*

*Master Quantum Science and Technology.*

### Undergraduate (degree)

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**Marc Farreras**

**University of Barcelona**

*Exact XY model simulation with a quantum computer*

*Feb 2023 – Jul 2023*

*Physics Degree*

**Alex Alemany**

**Universitat Politècnica de Catalunya**

*The HHL algorithm*

*Feb 2023 – Jul 2023*

*Computer Science Degree. Co-supervised with Jordi Delgado.*

**Júlia Barberà Rodríguez**

**University of Barcelona**

*Application of Grover's quantum algorithm for string matching*

*Feb 2022 – Jul 2022*

*Physics Degree*

**Elies M. Gil Fuster**

**University of Barcelona**

*Variational Quantum Classifier*

*Feb 2019 – Jul 2019*

*Physics Degree. Co-supervised with J. I. Latorre.*

## Outreach

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Some of my talks and events videos are listed in my [Youtube Channel](#) playlists.

### Articles

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**Computación Cuántica: Una nueva (r)evolución en computación**

**BIT**

*BIT 236, Especial Tecnologías Cuánticas*

*Jun 2025*

**Computación cuántica: 25 años después**

**Revista Española de Física**

*Revista Española de Física 39 (1), 12-16*

*Jun 2025*

**Supercomputación y computación cuántica:  
el camino hacia la integración**

**Revista Española de Física**

*Revista Española de Física 38 (2), 37-41*

*Mar 2024*

**L'ordinador quàntic: un camí de ciència, tecnologia i sobirania**

**Revista IDEES**

*Revista IDEES núm. 61 "Quantum: una revolució que canviarà el món?".*

*Feb 2024*

*Translated to Spanish, English and Catalan.*

<b>Computació Cuàntica en la Nube</b> <i>Revista Española de Física 34 (1), 25-29.</i>	<b>Revista Española de Física</b> <i>Mar 2020</i>
<b>How I became a quantum computation scientist</b> <i>Medium article for @qiskit</i>	<i>Jul 2018</i>
<b>Contributing Writer</b> <i>Medium articles, @quantum_wa.</i>	<b>Quantum World Association</b> <i>2018 – 2019</i>
<b>Commissary</b> .....	
<b>City and Science Biennial</b> <i>With Toni Pou and Teresa Badia.</i>	<b>Ajuntament de Barcelona</b> <i>2025</i>
<b>Panels and round tables</b> .....	
<b>Talent Arena MWC</b> <i>Conversation with Antonio Acín</i>	<b>Barcelona</b> <i>Mar 5, 2025</i>
<b>Jornades REACT</b> <i>Round table with Teresa Riesgo Alcaide, Laia Bonet, Xavier Azemar Mallard Mateo Valero Cortes. Mar 29, 2023</i> <i>Moderated by Elena Arrieta Palacio.</i>	<b>Barcelona</b>
<b>Premios Nacionales de Investigación</b> <i>Presenter and moderator of the act.</i> <i>Chaired by HRH King and Queen of Spain, Spanish Minister of Science and Universities and Barcelona Mayor.</i>	<b>Barcelona</b> <i>May 5, 2022</i>
<b>Mujeres y Digitalización: Por una España Igualitaria</b> <i>Round table with Marta Villegas, Lucía Flecha and Susana Fernández.</i> <i>Moderated by the Secretary of State of Digitalization and AI Carme Artigas.</i>	<b>MINECO</b> <i>Mar 8, 2022</i>
<b>Dia Internacional Dona i Nena a la ciència</b> <i>Event with Barcelona city Mayor and government.</i>	<b>Ajuntament de Barcelona</b> <i>Feb 11, 2022</i>
<b>Women in Physics path</b> <i>Organized by the Equality commission from the Physics Faculty</i>	<b>Universitat de Barcelona</b> <i>Mar 3 2021</i>
<b>Keynote speech</b> .....	
<b>Bojos de la Ciència</b> <i>Speech about Bojos per la Supercomputació program</i>	<b>Fundació Catalunya-La Pedrera</b> <i>Dec 10 2018</i>
<b>Bojos de la Ciència</b> <i>Speech at Master grants act</i>	<b>Fundació Catalunya-La Pedrera</b> <i>Oct 16 2018</i>
<b>Talks and courses</b> .....	
<b>Computació quàntica: passat, present i futur d'una (r)evolució tecnològica</b> <i>Mobile World Congress</i>	<b>Beat Barcelona</b> <i>Mar 6, 2025</i>
<b>Quantum computers: the new supercomputer partition</b> <i>Mobile World Congress</i>	<b>BSC Booth.</b> <i>Mar 6, 2025</i>
<b>Computación cuántica: pasado, presente y futuro de una (r)evolución tecnológica</b> <i>Casa del Cordón</i>	<b>Burgos, Spain.</b> <i>Feb 27, 2025</i>
<b>Computació quàntica: passat, present i futur d'una (r)evolució tecnològica</b> <i>Cicle Últimes fronteres: la ciència del segle XXI</i>	<b>Universitat de Girona</b> <i>May 4, 2023</i>
<b>Computación cuántica: presente y futuro de una revolución tecn.</b> <i>Jornada tecnología.</i>	<b>Uni. Las Palmas de Gran Canaria</b> <i>Apr 18, 2023</i>
<b>Computació Quàntica i els reptes de Talent TIC en els propers anys</b> <i>Col·legi d'Informàtica de Catalunya</i>	<b>Lul·liana</b> <i>Nov 24, 2022</i>
<b>Tecnologies quàntiques: present i futur d'una (r)evolució tecnològica</b> <i>Casal de Joves Sant Just Desvern</i>	<b>Jornades Feministes</b> <i>Nov 20, 2022</i>
<b>Present i futur de les tecnologies quàntiques</b> <i>Two-day introductory course for senior citizens.</i>	<b>A-12 Estudis i Recerca Universitaria</b> <i>Oct 20-26, 2022</i>

<b>Computació quàntica: present i futur d'una revolució tecnològica</b> Universitat Politècnica de Catalunya.	<b>Open Day TIC</b> May 12, 2022
<b>Tecnologías Cuánticas: presente y futuro</b> Barcelona.	<b>Pint of Science</b> May 11, 2022
<b>Quantum Spain: un impulso para el ecosistema de computación cuántica</b> Seminar for the Corporación Tecnológica de Andalucía. Virtual.	<b>CTA</b> Apr 26, 2022
<b>Supercomputación y Quantum Spain</b> Seminar for the Plataforma Tecnológica Española y de Tecnologías Disruptivas. Virtual.	<b>PTE Disruptive</b> Mar 22, 2022
<b>Tecnologías cuánticas: presente y futuro</b> Virtual.	<b>Col · legi de Biòlegs de Catalunya</b> Mar 16, 2022
<b>Computación Cuántica</b> Cosmocaixa (Barcelona)	<b>Live Talks Cosmocaixa</b> Feb 16, 2022
<b>Quantum Spain</b> Quantum Barcelona and Madrid meet-up.	<b>Meet-up</b> Dec 13, 2021/Feb 9, 2022
<b>Quantum Calling</b> Waterloo Quantum Meet-up	<b>K-W Quantum Enthusiasts Meetup</b> Jun 18, 2020
<b>Quantica</b> Quantum computing talk and participation in the exhibition (video)	<b>CCCB</b> Apr 10-Sep 26, 2019
<b>De las computadoras a los ordenadores</b> Badajoz, Spain	<b>Margarita Salas Honoris Causa PhD event</b> Feb 26, 2019
<b>Technology to manipulate Nature</b> Madrid, Spain	<b>El País con tu Futuro</b> Dec 18, 2018
<b>Quantum Computation: a new paradigm</b> Sant Feliu de Llobregat, Barcelona, Spain	<b>TEDx talk</b> Sep 15, 2018
<b>Quantum Computation</b> Researcher's Night 2018	<b>Cosmocaixa (Science Museum)</b> Sep 28, 2018
<b>Mentorship programs</b> .....	
<b>Quantum Open Source Foundation mentorship program</b> Mentor	<b>QOSF</b> Sep 2020 – Jan 2021
<b>Girls E-Mentorship program</b> Mentor	<b>GEM</b> Sep 2020 – June 2021