

Alba Cervera-Lierta | Full CV

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Education

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

Positions

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

Funded projects

European

EuroQHPC-Integration project

Budget: 745.200 €(WP), Role: *EuroQCS-Spain* consortia coordinator.

EuroHPC - Joint Undertaking

2025 – 2029

National

Logic Artificial Intelligence for Photonics (LOGITONICS)

Budget: 75k €, Role: *principal investigator*.

Agencia Estatal de Investigación (AEI)

2024 – 2028

Ramón y Cajal fellowship

Budget: 50k €, *Tenure track position*.

Agencia Estatal de Investigación (AEI)

2024 – 2029

Quantum Spain project

Budget: 22M €, Role: *principal investigator*

<https://quantumspain-project.es>

Secretary of State of Digitalization and AI (SEDIA)

2021 – 2025

Industry

Quantum Experience for Academic Research Program

Funding: *Exclusive access to pulse-level control of IBM quantum devices*, Role: *co-PI*.

IBM

Project: High-dimensional quantum experiments superconducting circuits.

2021 – 2022

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](#).

23. Warm Starts, Cold States: Exploiting Adiabaticity for Variational Ground-States

R. Puig, B. Casas, A. Cervera-Lierta, Z. Holmes, A. Pérez-Salinas
arXiv:2602.06137 [quant-ph].

Preprint

2026

22. Hardware-inspired Continuous Variables Quantum Optical Neural Networks

T. Krasimirov-Ivanov, A. Cervera-Lierta, P. Stornati, F. Centrone
arXiv:2512.05204 [quant-ph].

Preprint

2025

21. Gauge invariance from quantum information principles

C. Núñez, M. Pardina, M. Asorey, J. I. Latorre, A. Cervera-Lierta
arXiv:2511.04358 [hep-th].

Preprint

2025

20. Orchestrating Quantum-HPC Workflows

with Distributed Quantum Circuit Cutting

M. Tejedor, B. Casas, F. Conejero, A. Cervera-Lierta, R. Badia

Proceedings of the SC'25 Workshops of the International Conference for High Performance Computing, Networking, Storage and Analysis, 1898 - 1906.

SC Workshops'25

2025

19. Universality of entanglement in gluon dynamics

C. Núñez, A. Cervera-Lierta, J. I. Latorre

arXiv:2504.15353v1 [hep-th].

Acc. SciPost Physics

2025

18. Quantum Circuits for High-Dimensional Absolutely Maximally Entangled States <i>B. Casas, G. Rajchel-Mieldzioć, S. Ahmad Rather, M. Płodzień, W. Bruzda, A. Cervera-Lierta, K. Życzkowski, arXiv:2504.05394 [quant-ph].</i>	Acc. QST 2025
17. Multidimensional Fourier series with quantum circuits <i>B. Casas, A. Cervera-Lierta</i> Physical Review A 107, 062612 (2023).	Phys. Rev. A 2023
16. Design of quantum optical experiments with Logic Artificial Intelligence <i>A. Cervera-Lierta, M. Krenn, A. Aspuru-Guzik</i> Quantum 6, 836 (2022).	Quantum 2022
15. On scientific understanding with artificial intelligence <i>M. Krenn, R. Pollice, S. Y. Guo, et. al.</i> Nature Review Physics (2022).	Nat. Rev. Phys. 2022
14. Toward Reliability in the NISQ Era: Robust Interval Guarantee for Quantum Measurements on Approximate States <i>M. Weber, A. Anand, A. Cervera-Lierta, J. S. Kottmann, T. H. Kyaw, et. al.</i> Physical Review Research 4, 033217 (2022).	Phys. Rev. Research 2022
13. Programming Physical Quantum Systems with Pulse-Level Control <i>K. N. Smith, G. S. Ravi, T. Alexander, et. al.</i> Frontiers in Physics, 672 (2022).	Front. Phys. 2022
12. Learning Interpretable Representations of Entanglement in Quantum Optics Experiments using Deep Generative Models <i>D. Flam-Shepherd, T. Wu, X. Gu, A. Cervera-Lierta, M. Krenn, A. Aspuru-Guzik</i> Nature Machine Intelligence 4 (6), 544-554 (2022).	Nat. Mach. Intell. 2021
11. Experimental high-dimensional Greenberger–Horne–Zeilinger entanglement with superconducting transmon qutrits <i>A. Cervera-Lierta, M. Krenn, A. Aspuru-Guzik, A. Galda</i> Physical Review Applied 17, 024062 (2022).	Phys. Rev. Appl. 2022
10. Noisy intermediate-scale quantum algorithms <i>K. Bharti, A. Cervera-Lierta, T. H. Kyaw, T. Haug, et. al.</i> Review of Modern Physics 94, 015004 (2022).	Rev. Mod. Phys. 2022
9. The Meta-Variational Quantum Eigensolver (Meta-VQE): Learning energy profiles of parameterized Hamiltonians for quantum simulation <i>A. Cervera-Lierta, J. S. Kottmann and A. Aspuru-Guzik</i> PRX Quantum 2, 020329 (2021).	PRX Quantum 2021
8. Tequila: A platform for rapid development of quantum algorithms <i>J. S. Kottmann, S. Alperin-Lea, T. Tamayo-Mendoza, A. Cervera-Lierta et. al.</i> Quantum Science and Technology 6 024009 (2021).	Quantum Sci. Technol. 2021
7. Data Re-uploading for a Universal Quantum Classifier <i>A. Pérez-Salinas, A. Cervera-Lierta, E. Gil-Fuster, J. I. Latorre</i> Quantum 4, 226 (2020).	Quantum 2020
6. Maximal Entanglement: Applications in Quantum Information and Particle Physics <i>A. Cervera-Lierta</i> arXiv:1906.12099 [quant-ph].	PhD Thesis 2019
5. Quantum Circuits for Maximally Entangled States <i>A. Cervera-Lierta, J. I. Latorre, D. Goyeneche</i> Physical Review A 100, 022342 (2019).	Phys. Rev. A 2019
4. Exact Ising Simulation on a Quantum Computer <i>A. Cervera-Lierta</i> Quantum 2, 114 (2018).	Quantum 2018
3. Multipartite Entanglement in Spin Chains and the Hyperdeterminant <i>A. Cervera-Lierta, A. Gasull, J. I. Latorre and G. Sierra.</i> Journal of Physics A: Mathematical and Theoretical 51, 505301 (2018).	J. Phys. A Math. Theor. 2018

2. Maximal Entanglement in High Energy Physics	SciPost Phys.
<i>A. Cervera-Lierta, J. I. Latorre, J. Rojo and L. Rottoli</i>	2017
SciPost Physics 3 , 036 (2017).	
1. Operational Approach to Bell Inequalities: Application to qutrits	Phys. Rev. A
<i>D. Alsina, A. Cervera, D. Goyeneche, J. I. Latorre and K. Zyczkowski</i>	2016
Physical Review A 94 , 032102 (2016).	
Reports and white papers	
When matter and information merge into “Quantum”	Commun. Phys.
<i>R. Aguado, A. Cervera-Lierta, A. Correia, et. al., Communications Physics</i> 6 (1) 266 (2023).	2023
Workflows Community Summit 2022: A Roadmap Revolution	Technical Report
<i>R. Ferreira da Silva, R. M. Badia, V. Bala, et. al.</i>	2023
ORNL/TM-2023/2885, arXiv:2304.00019 [cs.DC].	
Books, chapters and notes	
Machine learning in quantum sciences	Cambridge University Press
<i>A. Dawid, J. Arnold, B. Requena, et. al.</i>	2025
Cambridge University Press 2025, arXiv:2204.04198 [quant-ph].	
Simulation of the 1d XY model on a quantum computer	SciPost Phys. Lect. Notes
<i>M. Farreras, A. Cervera-Lierta</i>	2025
SciPost Physics Lecture Notes 95 (2025).	
Software development	
<u>Libraries:</u>	
Distributed quantum circuit cutting library “Qdislib”	Python
<i>Project collaborator, https://qdislib.readthedocs.io/</i>	2025
Quantum computing open-source library “Tequila”	Python
<i>Project collaborator, https://github.com/tequilahub/</i>	2021
<u>Codes and demos:</u>	
Logic AI algorithm “Klaus”	Mathematica
<i>Creator and developer, https://github.com/AlbaCL/Klaus</i>	2022
Meta Variational Quantum Eigensolver	Python
<i>Co-creator and developer., https://github.com/aspru-guzik-group/Meta-VQE</i>	2021
Talks and seminars	
Some of my talks' videos are listed in my <u>Youtube Channel</u> playlists.	
Virtual talks due to COVID-19 pandemic.	
Keynote	
Lliçó Inaugural	UPF
<i>“Tecnologies quàntiques: passat, present i futur d’una (r)evolució tecnològica”</i>	Sep 30 2024
Enginyeries Universitat Pompeu Fabra.	
100tífiques	UPC
<i>“Tecnologies quàntiques: passat, present i futur d’una (r)evolució tecnològica”</i>	Feb 1 2024
Fundació Catalana per a la Recerca i la Innovació.	
The quest for the quantum computer	10 th BSC Doctoral Symposium
<i>Barcelona, Spain</i>	May 9, 2023
The Noisy Intermediate-Scale Quantum era	CARLA 2022
<i>Porto Alegre, Brasil</i>	Sep 28-30, 2022
Margarita Salas Honoris Causa PhD act	Universidad de Extremadura
<i>“De las computadoras a los ordenadores”</i>	Feb 2 2019

Colloquium

Computación cuántica: pasado, presente y futuro de una revolución tecnológica

Opening academic year Aula de Ciencia y Tecnología, Universidad de Alicante, Spain.

Universidad de Alicante

Sep 28, 2023

Tecnologies quàntiques: present i futur

Universitat de Barcelona, Spain.

ICCUB Colloquia

Feb 16, 2022

Invited

A quantum computer decalogue

XL Trobades de la Mediterrània

Maó, Spain.

Oct 15, 2025

Quantum-HPC integration: challenges and opportunities

SQA 2025

Delft, The Netherlands.

Aug 26, 2025

Quantum computers: the new supercomputer partition

HiPEAC 2025, Classical HPC & QC: the way to foster the integration workshop

Barcelona, Spain.

Jan 20, 2025

Quantum computers: the new supercomputer partition

SC24

Atlanta, USA

Nov 20, 2024

Design of quantum optical experiments with logic artificial intelligence

SCOP24

ICFO, Barcelona

Oct 3, 2024

Building the Spanish Quantum Computer

Quantum Technologies in Europe, Madrid, Spain

Quantera

Nov 23, 2023

Quantum-HPC integration: challenges and opportunities

EQTC 2023

Hannover, Germany

Oct 19, 2023

Variational Quantum Algorithms

QTYR 2023

CSIC, Madrid

Jul 04, 2023

Quantum Spain in the NISQ era

QBN Meeting on Quantum Computing and Applications

BSC-CNS

Jun 15, 2023

High-dimensional quantum computation: opportunities and challenges

Symposium on Open-Source Tools for Quantum Computing & Simulation

ICFO

Mar 31, 2023

High-dimensional quantum computation

CERN

QT4HPC

Nov 2, 2022

Quantum algorithms in near term devices

IQTC, University of Barcelona (Spain).

New Trends in Computational Chemistry

Sep 9, 2022

Quantum Spain

Barcelona (Spain).

Quantum 2022

Jun 22, 2022

Quantum Spain: un impulso para el ecosistema de computación cuántica

NASERTIC, Pamplona (Spain).

Jornada cuántica

May 4, 2022

Quantum Spain: un impulso para el ecosistema de computación cuántica

SCAYLE, León (Spain).

Jornada Eco. Cuántico

Mar 1, 2022

Near term quantum computation: opportunities and challenges

Bilbao (Spain).

Quantum 2021

Nov 24, 2021

Noisy Intermediate-Scale Quantum era

Virtual (*)

JURES 2021

Sep 17, 2021

Noisy Intermediate-Scale Quantum algorithms

Perspectives on Quantum Sensing and Computation for Particle Physics. Virtual (*)

CERN

Jul 15, 2021

The Meta-Variational Quantum Eigensolver

Virtual (*)

Machine Learning for Quantum X

Jul 6, 2021

The Meta-Variational Quantum Eigensolver

Virtual (*)

QWorld Quantum Science Days

Jun 1, 2021

Chronicles of Entangland, the foundation of the SC town Virtual (*).	Qiskit Hackathon Europe <i>May 26, 2021</i>
Experimental high-dimensional GHZ entanglement with superconducting transmon qutrits <i>Chicago. Virtual (*).</i>	Pulse-level Quantum Control Workshop <i>May 18, 2021</i>
Maximal Entanglement in High Energy Physics <i>Topical Group on Hadronic Physics. Virtual (*).</i>	APS April Meeting <i>Apr 15, 2021</i>
Noisy Intermediate-Scale Quantum algorithms <i>Virtual (*).</i>	Universidad Iberoamericana <i>Apr 13, 2021</i>
Please, feed the quantum troll! <i>Virtual (*).</i>	Q-Hack 2021 <i>Feb 19, 2021</i>
Testing and designing quantum algorithms for the NISQ era <i>Quantum Computing and Simulation on Near-Term Devices. Virtual (*).</i>	INT-20-3 <i>Nov 21, 2020</i>
Maximal Entanglement in High Energy Physics, Quantum Entanglement at Collider Energies <i>Stony Brook (United States).</i>	CFNS Stony Brook <i>Sep 11, 2018</i>
Exact simulation of a Quantum Phase Transition on a quantum computer <i>Barcelona (Spain).</i>	Quantum Phase Transitions <i>Apr 05, 2018</i>
Emergence of Gauge Symmetry from a Maximal Entanglement Principle <i>Madrid (Spain).</i>	Universidad Complutense de Madrid <i>Sep 21, 2016</i>
Contributed.....	
The Meta-Variational Quantum Eigensolver <i>Virtual (*).</i>	APS March Meeting 2021 <i>Mar 18, 2021</i>
Data re-uploading for a universal quantum classifier <i>Virtual (*).</i>	Q-Turn 2020 <i>Nov 24, 2020</i>
Data re-uploading for a universal quantum classifier <i>Quantum Techniques Machine Learning. Virtual (*).</i>	QTML 2020 <i>Nov 12, 2020</i>
Maximal Entanglement in Quantum Computation <i>Barcelona (Spain).</i>	BSC Severo Ochoa Doctoral Symposium <i>May 07, 2019</i>
Seminars.....	
Ordenadores cuánticos: la nueva partición de los superordenadores <i>Ciclo de charlas por el Año Internacional de la Ciencia y Tecnología Cuántica.</i>	Universidad de Sevilla <i>May 14, 2025</i>
Computació quàntica: reptes i oportunitats <i>FIB</i>	UPC <i>Mar 11, 2025</i>
The Noisy Intermediate-Scale Quantum Computation <i>IQCC</i>	Universitat de Girona <i>Jan 21, 2025</i>
Computación cuántica: pasado, presente y futuro de una revolución tecnológica <i>Madrid, Spain</i>	Telefónica <i>Feb 21, 2024</i>
Quantum-HPC integration: challenges and opportunities <i>Toronto, Canada</i>	LG Toronto <i>Oct 26, 2023</i>
Quantum Spain: creating a public quantum-HPC infrastructure <i>European Comission (Virtual).</i>	Quantum Cafe <i>Sep 21, 2023</i>
A roadmap to quantum computing integration into HPC infrastructures	RISC2 Seminar Series <i>Mar 15, 2023</i>
Noisy Intermediate Scale Quantum Computation <i>Dept. Condensed Matter Physics.</i>	Universidad de Zaragoza <i>Jun 3, 2022</i>

Noisy Intermediate Scale Quantum Computation Virtual.	Universidad Nacional de Colombia
Design of quantum optical experiments with logic artificial intelligence <i>Quantum Optics group seminar.</i>	MPQ Oct 29, 2021
High-dimensional quantum computing experiments <i>Prof. Manas Mukherjee group meeting (Singapore, Virtual *)</i>	CQT Aug 03, 2021
Maximal Entanglement in a Quantum Computer <i>Fermilab theory seminars. Virtual (*)</i>	Fermilab Jun 15, 2021
The Meta-Variational Quantum Eigensolver <i>Oxford Quantum Information Society. Virtual (*)</i>	Oxford May 20, 2021
The Meta-Variational Quantum Eigensolver <i>Virtual.</i>	Scientific Machine Learning Webinars May 6, 2021
Noisy Intermediate-Scale Quantum algorithms <i>Hypatia Series. Virtual(*).</i>	Alexandria University Apr 8, 2021
Maximal Entanglement in High Energy Physics <i>Nuclear Theory series. Virtual(*).</i>	University of Maryland Apr 2, 2021
Noisy Intermediate-Scale Quantum algorithms <i>Belgian Quantum Physics Initiative. Virtual(*).</i>	Académie Royale de Belgique Mar 4, 2021
Designing VQA with Tequila <i>Virtual.</i>	Quantum Conversations by the Bay Nov 28, 2020
Maximal Entanglement. Applications to Quantum Computation and Particle Physics <i>Matterlab group meeting. Toronto (Canada).</i>	UofT Mar 1, 2029

Panels and round tables

As a moderator

Round table Industrial forum

Participants: Marta Estarellas, Richard Kienhoefer, Pascale Senellart, Fernando de la Iglesia and Bilal Kalyoncu

Quantum Matter 2023

May 24, 2023

Round table Industrial forum

Participants: Marc Almendros, Niels Bultink, Gianni del Bimbo, Daniel Szombati, Yonatan Cohen, Josep M. Martorell, Heike Riel and Carmen Palacios.

Quantum Matter 2022

Jun 22, 2022

As a participant

Quantum computing + Communications: meet at the halfway.

Pannel with Hugues de Riedmatten.

PuzzleX

Oct 7, 2022

Moderated by Carmen G. Almudéver.

Catalan Nanotech Ecosystem Session

Moderated by Stephan Roche.

ACM Nanocomm

Oct 7, 2022

Women in ACM/IEEE WICE Luncheon

Moderated by Núria Castell.

ACM Nanocomm

Oct 6, 2022

Quantum Computing: Changing the Course of Industry

Round table with Carlos Kuchkovsky, Marta Pita, and Enrique Sanchez.

Barcelona New Economy Week

Oct 3, 2022

Moderated by Jaime Gómez.

Quantum Technologies

Panel with Silvia Carrasco, Carlos Abellán and Enrique Mora.

Moderated by Rubén Criado

Barcelona Deep Tech Summit

Sep 22, 2022

The Impact of Advanced Computing in AI

Round table with Jean Pierre Panziera and Nicolas Moes.

Moderated by David Pringle

Science|Business

Sep 19 2022

The Future of HPC	ACM Europe Summer School
<i>Panel with Paul Messina, Per Stenström, Uri Weiser and Min Li.</i>	<i>Sep 2 2022</i>
Moderated by Josephine Wood	
Young People Program Career Panel	DATE 2022
	<i>Mar 21 2022</i>
Quantum Software Ecosystem	IEEE Services
<i>Pannel discussion with industry and academic members</i>	<i>Sep 9 2021</i>

Committees and referee

National

Vice-president

Grupo Especializado en Información y Tecnologías Cuánticas (GEITC).

Real Sociedad Española de Física

2023 - Present

European

Quantum Computing working group

Quantum Coordination Board

European Quantum Flagship and EuroHPC

2023 - Present

Quantum Standardization working group

Quantum Coordination Board

European Quantum Flagship and EuroHPC

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

Board member

Generalitat de Catalunya

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-inspired Machine Learning for HEP Applications

Universitat Autònoma de Barcelona

Jan 23, 2026

Ema Puljak

Supervisor: Artur Garcia

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

Dec 9, 2024

Gilberto Díaz

Supervisors: C. Jaime Barrios Hernández, L. Angelo Steffenel, J. F. Couturier

Quantum many-body ground states via digital quantum simulation	Universidade do Minho
<i>Bruno Rodrigues Pacheco e Murta</i>	<i>Feb 29, 2024</i>
Supervisors: Joaquín Fernández-Rossier, Nuno Miguel Machado Reis Peres	
Reservoir Computing in Quantum Systems	Universitat de les Illes Balears
<i>Rodrigo Martínez Peña</i>	<i>Sep 7, 2023</i>
Supervisor: Roberta Zambrini, Miguel Cornelles Soriano	
Fault tolerant quantum algorithms	Universidad Complutense de Madrid
<i>Pablo Moreno-Casares</i>	<i>Jan 17, 2023</i>
Supervisor: Miguel Ángel Martín-Delgado	
Quantum information in lattices	Universitat Autònoma de Barcelona
<i>Bruna Gabrielly De Moraes Araújo</i>	<i>Jul 22, 2022</i>
Supervisors: Antonio Acín dal Maschio, Daniel Cavalcanti Santos and Stephan Jean Louis Roche	

Conference and seminars organization

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

Teaching

Lectures and courses

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

Teaching positions

Teacher Assistant

Calculus I-II, Theoretical Mechanics, Physics I - II.

Universitat Autònoma de Barcelona
2017 – 2019

Teacher Assistant

Modern Physics Laboratory, Computational Physics.

Universitat de Barcelona
2016 – 2017

Students

PhD

César Fernández Lamas

Co-supervised with Javier Argüello Luengo and Antonio Rubio Abadal

Universitat de Barcelona
Feb 2026 – Present

Todor Krasmirov

Universitat de Barcelona
Oct 2025 – Present

Francesco Aldo Venturelli

Co-supervised with Miguel Ángel González Ballester

Universitat Pompeu Fabra
Nov 2024 – Present

Berta Casas Font

Co-supervised with Artur Garcia

University of Barcelona
Sep 2022 – Present

Master

Blanca Belmonte

Particle detection using entanglement

Co-supervised with Diego Blas. Master Quantum Science and Technology.

University of Barcelona
Feb 2026 – Jul 2026

Mar Tejedor Ninou

Distributed Circuit Cutting for Hybrid Quantum-HPC Systems

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

University of Barcelona
Feb 2025 – Jul 2025

Juan Francisco Martín Bravo

Quantum benchmarking: entanglement measures in a quantum computer

Master Quantum Science and Technology.

University of Barcelona
Feb 2023 – Jul 2023

Berta Casas Font

Quantum function fitting and classification beyond the single-qubit model

Master Quantum Science and Technology.

University of Barcelona
Feb 2022 – Jul 2022

Internships

Francesc Sabater Garcia

Adding Qibo as a Supported Framework for Mitiq

Master Quantum Science and Technology.

University of Barcelona
Sep 2023 – Feb 2024

Undergraduate (degree)

Alba Guasch

Fault Tolerant Quantum Computation

Physics Degree. Co-supervised with Sofyan Iblisdir.

Universitat de Barcelona
Sep 2025 – Jan 2026

Natasha Trojan

Optimization of quantum circuit cutting for distributed computing

Computer Science Degree. Co-supervised with Rosa Badia.

Universitat Politècnica de Catalunya
Sep 2025 – Jan 2026

Marc Farreras

Exact XY model simulation with a quantum computer

Physics Degree

University of Barcelona
Feb 2023 – Jul 2023

Alex Alemany

The HHL algorithm

Computer Science Degree. Co-supervised with Jordi Delgado.

Universitat Politècnica de Catalunya
Feb 2023 – Jul 2023

Júlia Barberà Rodríguez	University of Barcelona
<i>Application of Grover's quantum algorithm for string matching</i>	<i>Feb 2022 – Jul 2022</i>
Physics Degree	
Elias M. Gil Fuster	University of Barcelona
<i>Variational Quantum Classifier</i>	<i>Feb 2019 – Jul 2019</i>
Physics Degree. Co-supervised with J. I. Latorre.	

Outreach

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

Articles

Computación Cuántica: Una nueva (r)evolución en computación	BIT
<i>BIT 236, Especial Tecnologías Cuánticas</i>	<i>Jun 2025</i>
Computación cuántica: 25 años después	Revista Española de Física
<i>Revista Española de Física 39 (1), 12-16</i>	<i>Jun 2025</i>
Supercomputación y computación cuántica: el camino hacia la integración	Revista Española de Física
<i>Revista Española de Física 38 (2), 37-41</i>	<i>Mar 2024</i>
L'ordinador quàntic: un camí de ciència, tecnologia i sobirania	Revista IDEES
<i>Revista IDEES núm. 61 "Quantum: una revolució que canviarà el món?"</i>	<i>Feb 2024</i>
Translated to Spanish, English and Catalan.	
Computación Cuántica en la Nube	Revista Española de Física
<i>Revista Española de Física 34 (1), 25-29.</i>	<i>Mar 2020</i>
How I became a quantum computation scientist	
<i>Medium article for @qiskit</i>	<i>Jul 2018</i>
Contributing Writer	Quantum World Association
<i>Medium articles, @quantum_wa.</i>	<i>2018 – 2019</i>

Commissary

City and Science Biennal	Ajuntament de Barcelona
<i>With Toni Pou and Teresa Badia.</i>	<i>2025</i>

Panels and round tables

Talent Arena MWC	Barcelona
<i>Conversation with Antonio Acín</i>	<i>Mar 5, 2025</i>
Jornades REACT	Barcelona
<i>Round table with Teresa Riesgo Alcaide, Laia Bonet, Xavier Azemar Mallard Mateo Valero Cortes.</i>	<i>Mar 29, 2023</i>
Moderated by Elena Arrieta Palacio.	
Premios Nacionales de Investigación	Barcelona
<i>Presenter and moderator of the act.</i>	<i>May 5, 2022</i>
Chaired by HRH King and Queen of Spain, Spanish Minister of Science and Universities and Barcelona Mayor.	

Mujeres y Digitalización: Por una España Igualitaria	MINECO
<i>Round table with Marta Villegas, Lucía Flecha and Susana Fernández.</i>	<i>Mar 8, 2022</i>

Moderated by the Secretary of State of Digitalization and AI Carme Artigas.	
Dia Internacional Dona i Nena a la ciència	Ajuntament de Barcelona

<i>Event with Barcelona city Mayor and government.</i>	<i>Feb 11, 2022</i>
Women in Physics path	Universitat de Barcelona

<i>Organized by the Equality commission from the Physics Faculty</i>	<i>Mar 3 2021</i>
Keynote speech	

Bojos de la Ciència	Fundació Catalunya-La Pedrera
<i>Speech about Bojos per la Supercomputació program</i>	<i>Dec 10 2018</i>

Talks and courses.....

Computació quàntica: passat, present i futur d'una (r)evolució tecnològica Mobile World Congress	Beat Barcelona Mar 6, 2025
Quantum computers: the new supercomputer partition Mobile World Congress	BSC Booth. Mar 6, 2025
Computación cuántica: pasado, presente y futuro de una (r)evolución tecnológica Casa del Cordón	Burgos, Spain. Feb 27, 2025
Computació quàntica: passat, present i futur d'una (r)evolució tecnològica Cicle Últimes fronteres: la ciència del segle XXI	Universitat de Girona May 4, 2023
Computación cuántica: presente y futuro de una revolución tecn. Jornada tecnología.	Uni. Las Palmas de Gran Canaria Apr 18, 2023
Computació Quàntica i els reptes de Talent TIC en els propers anys Col · legi d'Informàtica de Catalunya	Lul · liana Nov 24, 2022
Tecnologies quàntiques: present i futur d'una (r)evolució tecnològica Casal de Joves Sant Just Desvern	Jornades Feministes Nov 20, 2022
Present i futur de les tecnologies quàntiques Two-day introductory course for senior citizens.	A-12 Estudis i Recerca Universitaria Oct 20-26, 2022
Computació quàntica: present i futur d'una revolució tecnològica Universitat Politècnica de Catalunya.	Open Day TIC May 12, 2022
Tecnologías Cuánticas: presente y futuro Barcelona.	Pint of Science May 11, 2022
Quantum Spain: un impulso para el ecosistema de computación cuántica Seminar for the Corporación Tecnológica de Andalucía. Virtual.	CTA Apr 26, 2022
Supercomputación y Quantum Spain Seminar for the Plataforma Tecnológica Española y de Tecnologías Disruptivas. Virtual.	PTE Disruptive Mar 22, 2022
Tecnologías cuánticas: presente y futuro Virtual.	Col · legi de Biòlegs de Catalunya Mar 16, 2022
Computación Cuántica Cosmocaixa (Barcelona)	Live Talks Cosmocaixa Feb 16, 2022
Quantum Spain Quantum Barcelona and Madrid meet-up.	Meet-up Dec 13, 2021/Feb 9, 2022
Quantum Calling Waterloo Quantum Meet-up	K-W Quantum Enthusiasts Meetup Jun 18, 2020
Quantica Quantum computing talk and participation in the exhibition (video)	CCCB Apr 10-Sep 26, 2019
De las computadoras a los ordenadores Badajoz, Spain	Margarita Salas Honoris Causa PhD event Feb 26, 2019
Technology to manipulate Nature Madrid, Spain	El País con tu Futuro Dec 18, 2018
Quantum Computation: a new paradigm Sant Feliu de Llobregat, Barcelona, Spain	TEDx talk Sep 15, 2018
Quantum Computation Researcher's Night 2018	Cosmocaixa (Science Museum) Sep 28, 2018

Mentorship programs	
Quantum Open Source Foundation mentorship program	QOSF
<i>Mentor</i>	<i>Sep 2020 – Jan 2021</i>
Girls E-Mentorship program	GEM
<i>Mentor</i>	<i>Sep 2020 – June 2021</i>