

Alba Cervera-Lierta | CV

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Education

Doctor of Philosophy (PhD) <i>Supervisor: Dr. José Ignacio Latorre</i>	Universitat de Barcelona 2015 – 2019
Master in Astrophysics, Particle Physics and Cosmology <i>Specialized in Particle Physics and Gravitation.</i>	Universitat de Barcelona 2014 – 2015
Bachelor in Physics <i>Specialized in Fundamental Physics</i>	Universitat de Barcelona 2009 – 2014

Experience and Collaborations

Research

Senior Researcher <i>Quantic group (CASE department)</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

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

Organization

Quantum Research Seminars Toronto. <i>Co-organizer and chair. Youtube: Quantum Research Seminars Toronto.</i>	Virtual 2020 – 2021
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Teaching

Teacher Assistant	Universitat Autònoma de Barcelona 2017 – 2019
Teacher Assistant	Universitat de Barcelona 2016 – 2017

Awards and Honors

IBM Pulse Access Award	IBM Feb 2021
PhD Excellent Cum Laude	Universitat de Barcelona Jun 2019
Teach Me QISKit Award	IBM Jun 2018

Publications

Design of quantum optical experiments with Logic Artificial Intelligence <i>A. Cervera-Liarta, M. Krenn, A. Aspuru-Guzik</i> arXiv:2109.13273 [quant-ph].	Preprint 2021
Learning Interpretable Representations of Entanglement in Quantum Optics Experiments using Deep Generative Models <i>D. Flam-Shepherd, T. Wu, X. Gu, A. Cervera-Liarta, M. Krenn, A. Aspuru-Guzik</i> arXiv:2109.02490 [cs.LG].	Preprint 2021
Experimental high-dimensional Greenberger–Horne–Zeilinger entanglement with superconducting transmon qutrits <i>A. Cervera-Liarta, M. Krenn, A. Aspuru-Guzik, A. Galda</i> arXiv:2104.05627 [quant-ph].	Preprint 2021
Noisy intermediate-scale quantum (NISQ) algorithms <i>K. Bharti, A. Cervera-Liarta, T. H. Kyaw, T. Haug, et. al.</i> arXiv:2101.08448 [quant-ph]	Review 2021
The Meta-Variational Quantum Eigensolver (Meta-VQE): Learning energy profiles of parameterized Hamiltonians for quantum simulation <i>A. Cervera-Liarta, J. S. Kottmann and A. Aspuru-Guzik</i> PRX Quantum 2 , 020329 (2021).	2021
Tequila: A platform for rapid development of quantum algorithms <i>J. S. Kottmann, S. Alperin-Lea, T. Tamayo-Mendoza, A. Cervera-Liarta et. al.</i> Quantum Sci. Technol. 6 024009	2021
Data Re-uploading for a Universal Quantum Classifier <i>A. Pérez-Salinas, A. Cervera-Liarta, E. Gil-Fuster, J. I. Latorre</i> Quantum 4 , 226 (2020).	2020
Quantum Circuits for Maximally Entangled States <i>A. Cervera-Liarta, J. I. Latorre, D. Goyeneche</i> Physical Review A 100 , 022342 (2019).	2019
Exact Ising Simulation on a Quantum Computer <i>A. Cervera-Liarta</i> Quantum 2 , 114 (2018).	2018
Multipartite Entanglement in Spin Chains and the Hyperdeterminant <i>A. Cervera-Liarta, A. Gasull, J. I. Latorre and G. Sierra.</i> Journal of Phys. A: Math. Theor. 51 , 505301 (2018).	2018
Maximal Entanglement in High Energy Physics <i>A. Cervera-Liarta, J. I. Latorre, J. Rojo and L. Rottoli</i> SciPost Phys. 3 , 036 (2017).	2017
Operational Approach to Bell Inequalities: Application to qutrits <i>D. Alsina, A. Cervera, D. Goyeneche, J. I. Latorre and K. Zyczkowski</i> Phys. Rev. A 94 , 032102 (2016).	2016

Invited Talks and Seminars (a selection)

The full list can be found at my webpage <http://albacl.github.io>.

Noisy Intermediate-Scale Quantum algorithms <i>Perspectives on Quantum Sensing and Computation for Particle Physics</i>	CERN Jul 15, 2021
The Chronicles of Entangland, the foundation of the SC town <i>Qiskit Europe Hackathon</i>	IBM May 26, 2021
The Meta-Variational Quantum Eigensolver	Oxford Quantum Information Society May 20, 2021
Experimental high-dimensional GHZ entanglement with superconducting transmon qutrits, Pulse-level Quantum Control Workshop	Chicago Quantum Exchange May 18, 2021

Maximal entanglement in High-Energy physics <i>9th Biennial Workshop of the APS Topical Group on Hadronic Physics</i>	APS <i>Apr 15, 2021</i>
The Meta-Variational Quantum Eigensolver <i>March Meeting</i>	APS <i>Mar 18, 2021</i>
Noisy Intermediate-Scale Quantum algorithms <i>Belgian Quantum Physics Initiative colloquium</i>	Académie Royale de Belgique <i>Mar 4, 2021</i>
Please, feed the quantum troll! <i>Q-Hack</i>	Xanadu Quantum Computing <i>Feb 19, 2021</i>
Data re-uploading for a universal quantum classifier <i>Quantum Techniques in Machine Learning</i>	Zapata Computing <i>Nov 12, 2020</i>
Maximal Entanglement in High Energy Physics <i>Workshop on Quantum Entanglement at Collider Energies.</i>	CFSN Stony Brook, NY <i>Sep 11, 2018</i>

Courses and Schools

Variational Quantum Computing <i>Summer School on Quantum and Q-Inspired Computing</i>	Universidad Internacional Menéndez-Pelayo <i>Sep 7, 2021</i>
Noisy Intermediate-Scale Quantum Algorithms <i>Summer School "Machine Learning in Quantum Physics and Chemistry"</i>	Warsaw, Poland <i>Aug 25, 2021</i>
Quantum Computing in the NISQ era <i>Talk in Quantum Technologies Winter School</i>	UCL <i>Dec 10, 2020</i>
Bojos per la Supercomputació <i>Introductory course in quantum computation for high-school students</i>	BSC <i>26 Apr – 04 May, 2019</i>
The Quantum Revolution <i>Seminar at Master in Finance</i>	ESADE Business School <i>Jun 07, 2018</i>

Pannels

Quantum Software Ecosystem <i>Pannel discussion with industry and academic members</i>	IEEE Services <i>Sep 9 2021</i>
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Outreach

Mentorship programs	
Quantum Open Source Foundation mentorship program <i>Mentor</i>	QOSF <i>Sep 2020 – Jan 2021</i>
Girls E-Mentorship program <i>Mentor</i>	GEM <i>Sep 2020 – June 2021</i>
Pannels	
Women in Physics path <i>Organized by the Equality commission from the Physics Faculty</i>	Universitat de Barcelona <i>Mar 3 2021</i>
Key-note speech	
Margarita Salas Honoris Causa PhD act <i>Talk "De las computadoras a los ordenadores"</i>	Universidad de Extremadura <i>Feb 2 2019</i>
Bojos de la Ciència <i>Speech about Bojos per la Supercomputació program</i>	Fundació Catalunya-La Pedrera <i>Dec 10 2018</i>
Bojos de la Ciència <i>Speech at Master grants act</i>	Fundació Catalunya-La Pedrera <i>Oct 16 2018</i>

Articles.....

Computación Cuántica en la Nube

Revista Española de Física

RSEF

Mar 2020

How I became a quantum computation scientist

Medium article for @qiskit

Jul 2018

Contributing Writer

Medium articles, @quantum_wa.

Quantum World Association

2018 – 2019

Selected Talks.....

A selection of some popular science talks and contributions.

Quantum Calling

Waterloo Quantum Meet-up

K-W Quantum Enthusiasts Meetup

Jun 18, 2020

Quantica

Quantum computing talk and participation in the exhibition (video)

Apr 10-Sep 26, 2019

CCCB

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

Other skills

Programming Languages.....

Classical: Fortran, Python, Mathematica.

Quantum: QisKit (IBM), Qiskit Pulse (IBM), pyquil (Rigetti Computing), Cirq (Google), Tequila (MatterLab)

Languages.....

English (fluent), Spanish (mothertongue), Catalan (mothertongue).

Social Media.....

Twitter: Creator and manager of research group's account, @QUANTIC_BSC (until Jul 2019) and @QRSToronto.

Media: Several interviews in Spanish national newspapers and participated in radio programs (see my personal webpage for more information and links).