

# Alba Cervera Lierta | CV

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## Education

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

## Experience and Collaborations

### Research

<b>Postdoctoral Fellow</b> <i>Alán Aspuru-Guzik group</i>	<b>University of Toronto</b> 2019 –
<b>Technical Researcher</b> <i>Quantic group (CASE department)</i>	<b>Barcelona Supercomputing Center (BSC)</b> 2017 – 2019
<b>Visiting Scholar</b> <i>Dr. César Gómez's group.</i>	<b>Instituto de Física Teórica (CSIC)</b> Feb 2017
<b>Visiting Scholar</b> <i>Four months stay at Dr. Juan Rojo's group.</i>	<b>University of Oxford</b> 2016
<b>Specialized Technician</b> <i>Project: "Entanglement, tensor networks and cold gases"</i>	<b>Universitat de Barcelona</b> 2014

### Organization

<b>Quantum Research Seminars Toronto.</b> <i>Co-organizer. Event creator, organizer and chair. Youtube: Quantum Research Seminars Toronto.</i>	<b>Virtual</b> 2020 –
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### Teaching

<b>Teacher Assistant</b>	<b>Universitat Autònoma de Barcelona</b> 2017 – 2019
<b>Teacher Assistant</b>	<b>Universitat de Barcelona</b> 2016 – 2017

## Awards and Honors

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

## Publications

<b>Experimental high-dimensional Greenberger–Horne–Zeilinger entanglement with superconducting transmon qutrits</b> A. Cervera-Lierta, M. Krenn, A. Aspuru-Guzik, A. Galda, arXiv:2104.05627 [quant-ph].	2021
<b>Noisy intermediate-scale quantum (NISQ) algorithms</b> K. Bharti, A. Cervera-Lierta, T. H. Kyaw, T. Haug, et. al. arXiv:2101.08448 [quant-ph]	<b>Review</b> 2021

<b>Tequila: A platform for rapid development of quantum algorithms</b> <i>J. S. Kottmann, S. Alperin-Lea, T. Tamayo-Mendoza, A. Cervera-Liarta et. al.</i> Quantum Sci. Technol. <b>6</b> 024009	2021
<b>The Meta-Variational Quantum Eigensolver (Meta-VQE): Learning energy profiles of parameterized Hamiltonians for quantum simulation</b> A. Cervera-Liarta, J. S. Kottmann and A. Aspuru-Guzik, arXiv:2009.13545 [quant-ph].	2020
<b>Data Re-uploading for a Universal Quantum Classifier</b> A. Pérez-Salinas, A. Cervera-Liarta, E. Gil-Fuster, J. I. Latorre Quantum <b>4</b> , 226 (2020).	2020
<b>Maximal Entanglement: Applications in Quantum Information and Particle Physics</b> A. Cervera-Liarta arXiv:1906.12099 [quant-ph].	PhD Thesis 2019
<b>Quantum Circuits for Maximally Entangled States</b> A. Cervera-Liarta, J. I. Latorre, D. Goyeneche Physical Review A <b>100</b> , 022342 (2019).	2019
<b>Exact Ising Simulation on a Quantum Computer</b> A. Cervera-Liarta Quantum <b>2</b> , 114 (2018).	2018
<b>Multipartite Entanglement in Spin Chains and the Hyperdeterminant</b> A. Cervera-Liarta, A. Gasull, J. I. Latorre and G. Sierra. Journal of Phys. A: Math. Theor. <b>51</b> , 505301 (2018).	2018
<b>Maximal Entanglement in High Energy Physics</b> A. Cervera-Liarta, J. I. Latorre, J. Rojo and L. Rottoli SciPost Phys. <b>3</b> , 036 (2017).	2017
<b>Operational Approach to Bell Inequalities: Application to qutrits</b> D. Alsina, A. Cervera, D. Goyeneche, J. I. Latorre and K. Zyczkowski Phys. Rev. A <b>94</b> , 032102 (2016).	2016

## Seminars and Talks

<b>Maximal entanglement in High-Energy physics</b> <i>9th Biennial Workshop of the APS Topical Group on Hadronic Physics</i>	<b>APS</b> Apr 15, 2021
<b>Noisy Intermediate-Scale Quantum algorithms</b> <i>Semana de Ingeniería Física</i>	<b>Universidad Iberoamericana Ciudad de México</b> Apr 13, 2021
<b>Noisy Intermediate-Scale Quantum algorithms</b> <i>Hypatia Quantum Series</i>	<b>Alexandria University</b> Apr 8, 2021
<b>Maximal entanglement in High-Energy physics</b> <i>Nuclear Theory Series</i>	<b>University of Maryland</b> Apr 2, 2021
<b>The Meta-Variational Quantum Eigensolver</b> <i>March Meeting</i>	<b>APS</b> Mar 18, 2021
<b>Noisy Intermediate-Scale Quantum algorithms</b> <i>Belgian Quantum Physics Initiative colloquium</i>	<b>Académie Royale de Belgique</b> Mar 4, 2021
<b>Please, feed the quantum troll!</b> <i>Q-Hack</i>	<b>Xanadu Quantum Computing</b> Feb 19, 2021
<b>Data re-uploading for a universal quantum classifier</b> <i>Q-Turn Workshop</i>	<b>Q-Turn</b> Nov 27, 2020
<b>The quest for the final Quantum Computer</b> <i>Toronto Machine Learning Summit</i>	<b>TMLS</b> Nov 18, 2020
<b>Data re-uploading for a universal quantum classifier</b> <i>Quantum Techniques in Machine Learning</i>	<b>Zapata Computing</b> Nov 12, 2020

<b>Designing Variational Quantum Algorithms with Tequila</b> <i>Quantum Conversations by the Bay</i>	Oct 28, 2020
<b>Testing and designing quantum algorithms for the NISQ era</b> <i>Quantum Computing and Simulation on Near-Term Devices</i>	INT Oct 21, 2020
<b>Maximal Entanglement in Quantum Computation</b> <i>Severo Ochoa Doctoral Symposium</i>	BSC May 07, 2019
<b>Maximal Entanglement: Applications to Quantum Computation and Particle Physics</b> <i>MatterLab group meeting</i>	University of Toronto Mar 01, 2019
<b>Maximal Entanglement in High Energy Physics</b> <i>Workshop on Quantum Entanglement at Collider Energies.</i>	CFSN Stony Brook, NY Sep 11, 2018
<b>The Quantum Revolution</b> <i>Seminar at Master in Finance</i>	ESADE Business School Jun 07, 2018
<b>Exact Simulation of a QPT in a Quantum Computer</b> <i>Workshop on Quantum Phase Transitions</i>	Universitat de Barcelona Apr 06, 2018
<b>Emergence of Gauge Symmetry from a Maximal Entanglement Principle</b> <i>Seminar</i>	Universidad Complutense de Madrid Sep 21, 2016

## Courses

<b>Quantum Computing in the NISQ era</b> <i>Talk in Quantum Technologies Winter School</i>	UCL Dec 10, 2020
<b>Bojos per la Supercomputació</b> <i>Introductory course in quantum computation for high-school students</i>	BSC 26 Apr – 04 May, 2019
<i>Incoming.....</i>	
<b>Noisy Intermediate-Scale Quantum algorithms</b> <i>Summer School "Machine Learning in Quantum Physics and Chemistry"</i>	University of Warsaw Aug 24 - 3 Sep, 2021

## Outreach

<i>Mentorship programs.....</i>	
<b>Quantum Open Source Foundation mentorship program</b> <i>Mentor</i>	QOSF Sep 2020 – Jan 2021
<b>Girls E-Mentorship program</b> <i>Mentor</i>	GEM Sep 2020 – June 2021
<i>Articles.....</i>	
<b>Computación Cuántica en la Nube</b> <i>Revista Española de Física</i>	RSEF Mar 2020
<b>How I became a quantum computation scientist</b> <i>Medium article for @qiskit</i>	Jul 2018
<b>Contributing Writer</b> <i>Medium articles, @quantum_wa.</i>	Quantum World Association 2018 – 2019

## Talks

A selection of some popular science talks and contributions.

<b>Quantum Calling</b> <i>Waterloo Quantum Meet-up</i>	K-W Quantum Enthusiasts Meetup Jun 18, 2020
<b>Quantica</b> <i>Quantum computing talk and participation in the exhibition (video)</i>	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*

## Other skills

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### 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 (present).

**Webpage:** Research group webpage manager, quantic.bsc.es (until Nov 2018).

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