

# 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> Simulation of frustrated systems using tensor networks algorithms.	<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>PhD Excellent Cum Laude</b>	<b>Universitat de Barcelona</b> Jun 2019
<b>Teach Me QISKit Award</b> <i>For writing and programming an interactive self-paced Jupyter Notebook tutorial that explains a specific focus topic in quantum computing using QISKit and the IBM Q Experience</i>	<b>IBM</b> Jun 2018

## Publications

<b>Data Re-uploading for a Universal Quantum Classifier</b> <i>A. Pérez-Salinas, A. Cervera-Lierta, E. Gil-Fuster, J. I. Latorre</i> Quantum <b>4</b> , 226 (2020).	2020
<b>Quantum Circuits for Maximally Entangled States</b> <i>A. Cervera-Lierta, J. I. Latorre, D. Goyeneche</i> Physical Review A <b>100</b> , 022342 (2019).	2019

<b>Exact Ising Simulation on a Quantum Computer</b> <i>A. Cervera-Lierta</i> Quantum <b>2</b> , 114 (2018).	2018
<b>Multipartite Entanglement in Spin Chains and the Hyperdeterminant</b> <i>A. Cervera-Lierta, A. Gasull, J. I. Latorre and G. Sierra.</i> Journal of Phys. A: Math. Theor. <b>51</b> , 505301 (2018).	2018
<b>Maximal Entanglement in High Energy Physics</b> <i>A. Cervera-Lierta, J. I. Latorre, J. Rojo and L. Rottoli</i> SciPost Phys. <b>3</b> , 036 (2017).	2017
<b>Operational Approach to Bell Inequalities: Application to qutrits</b> <i>D. Alsina, A. Cervera, D. Goyeneche, J. I. Latorre and K. Zyczkowski</i> Phys. Rev. A <b>94</b> , 032102 (2016).	2016
<b>Preprints</b> .....	
<b>The Meta-Variational Quantum Eigensolver (Meta-VQE): Learning energy profiles of parameterized Hamiltonians for quantum simulation</b> <i>A. Cervera-Lierta, J. S. Kottmann and A. Aspuru-Guzik, arXiv:2009.13545 [quant-ph].</i>	2020
<b>Maximal Entanglement: Applications in Quantum Information and Particle Physics</b> <i>A. Cervera-Lierta</i> arXiv:1906.12099 [quant-ph].	PhD Thesis 2019

## Seminars and Talks

<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

## Outreach

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

## Contributing Writer

Medium articles, @quantum\_wa.

## Quantum World Association

2018 – 2019

## Talks.....

### **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

### **High School talks**

Every year, for the International Day of Women and Girl in Science and the Science Week

## Other skills

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### Programming Languages.....

**Classical:** Fortran, Python, Latex, Mathematica.

**Quantum:** QISKit (IBM), pyquil (Rigetti Computing), Cirq, 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:** I have had several interviews in Spanish national newspapers and participated in radio programs (see personal webpage for more information and links).