

# 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

<b>Postdoctoral Fellow</b> <i>Alan 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

## 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>	2018

Journal of Phys. A: Math. Theor. **51**, 505301 (2018).

### **Maximal Entanglement in High Energy Physics**

A. Cervera-Lierta, J. I. Latorre, J. Rojo and L. Rottoli  
SciPost Phys. **3**, 036 (2017).

2017

### **Operational Approach to Bell Inequalities: Application to qutrits**

D. Alsina, A. Cervera, D. Goyeneche, J. I. Latorre and K. Zyczkowski  
Phys. Rev. A **94**, 032102 (2016)

2016

### **Preprints**

### **Maximal Entanglement: Applications in Quantum Information and Particle Physics**

PhD Thesis

A. Cervera-Lierta

2019

arXiv:1906.12099 [quant-ph].

## **Seminars and Talks**

### **Maximal Entanglement in Quantum Computation**

BSC

Severo Ochoa Doctoral Symposium

May 07, 2019

### **Maximal Entanglement: Applications to Quantum Computation and Particle Physics**

University of Toronto

Mar 01, 2019

MatterLab group meeting

### **Maximal Entanglement in High Energy Physics**

CFSN Stony Brook, NY

Workshop on Quantum Entanglement at Collider Energies.

Sep 11, 2018

### **The Quantum Revolution**

ESADE Business School

Seminar at Master in Finance

Jun 07, 2018

### **Exact Simulation of a QPT in a Quantum Computer**

Universitat de Barcelona

Workshop on Quantum Phase Transitions

Apr 06, 2018

### **Emergence of Gauge Symmetry from a Maximal Entanglement Principle**

Universidad Complutense de Madrid

Seminar

Sep 21, 2016

## **Outreach**

### **Articles**

### **Computación Cuántica en la Nube**

RSEF

Revista Española de Física

Mar 2020

### **How I became a quantum computation scientist**

Medium article for @qiskit

Jul 2018

### **Contributing Writer**

Quantum World Association

Medium articles, @quantum\_wa.

2018 –

### **Talks**

### **Technology to manipulate Nature**

El País con tu Futuro

Madrid, Spain

Dec 18, 2018

### **Quantum Computation: a new paradigm**

TEDx talk

Sant Feliu de Llobregat, Barcelona, Spain

Sep 15, 2018

### **Quantum Computation**

Cosmocaixa (Science Museum)

Researcher's Night 2018

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.....

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

**Quantum:** QISKit (IBM), Forest (Rigetti Computing), Cirq (Google), Tequila (MatterLab)

### Languages.....

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

### Communication.....

**Twitter:** Creator and manager of research group's account, @QUANTIC\_BSC (until Jul 2019).

**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.

## Congresses attendance

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### 5th Conference on Quantum Information in Spain

*Organizers: Antonio Acín, Elena Enrique, Jordi Roca*

**ICFO, Barcelona, Spain**

*May 28–31, 2019*

### March Meeting

*Organizers: American Physical Society*

**Boston, MA**

*Mar 03–08, 2019*

### Quantum Entanglement at Collider Energies

*Organizers: K. Baker (Yale), I. Cloet (Argonne), A. Deshpande (BNL/SBU),  
D. Kharzeev (BNL/SBU), Y. J. Lee (MIT), T. Ullrich (BNL) and R. Venugopalan (BNL)*

**CFSN Stony Brook, NY**

*Sep 10–12, 2018*

### Summer School on Experimental Quantum Computation

*Organizer: P. Forn-Díaz (BSC)*

**CCBPP Benasque, Spain**

*Jun 10–21, 2018*

### Quantum Simulation & Computation

*Organizers: Enrique Rico (UPV-EHU), J. García-Ripoll (IFF-CSIC) and P. Forn-Díaz (BSC)*

**UPV-EHU, Bilbao, Spain**

*Feb 12–16, 2018*

### Multipartite Entanglement

*Organizers: G. Gour(Calgary), B. Kraus(IQOQI), J. I. Latorre (UB)  
and K. Zyczkowski (Kraków)*

**CCBPP Benasque, Spain**

*May 2016, 2018*

### Quantum Information

*Organizers: I. Cirac (MPI) and A. Ekert (U. Oxford/NUS)*

**CCBPP Benasque, Spain**

*Jul 5–14, 2017*

### Quantum Science Implementations

*Organizers: D. Chang (ICFO) and J. J. García-Ripoll (IFF-CSIC),  
L. Jiang (Yale U.) and O. Romero-Isart (IQOQI)*

**CCBPP Benasque, Spain**

*Jul 10–20, 2016*

### Emergent Properties of Spacetime

*Organizer: CERN*

**CERN**

*Jun 20–24, 2016*

### Quantum Matter Workshop

*Organizers: B. Paredes (IFT-CSIC) and G. Vidal (Perimeter I.)*

**CCBPP Benasque, Spain**

*Jun 15–27, 2014*

### Quantum Information Processing

*Organizer: Centro de Ciencias de Benasque Pedro Pascual (CCBPP)*

**Barcelona, Spain**

*Feb 3–7, 2014*