# Alba Cervera Lierta | CV

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## Education

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

## Experience and Collaborations

### Research

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

### Organization

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|---|---|
| **Quantum Research Seminars Toronto.** | **Virtual** |
| *Co-organizer. Event creator, organizer and chair. Youtube: Quantum Research Seminars Toronto.* | *2020 – Present* |

### Teaching

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|---|---|
| **Teacher Assistant** | **Universitat Autònoma de Barcelona** |
| | *2017 – 2019* |
| **Teacher Assistant** | **Universitat de Barcelona** |
| | *2016 – 2017* |

## Awards and Honors

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

## Publications

**Learning Interpretable Representations of Entanglement in Quantum Optics Experiments using Deep Generative Models** *2021*
D. Flam-Shepherd, T. Wu, X. Gu, A. Cervera-Lierta, M. Krenn, A. Aspuru-Guzik,
arXiv:2109.02490 [cs.LG].

**Experimental high-dimensional Greenberger–Horne–Zeilinger entanglement with superconducting transmon qutrits** *2021*

A. Cervera-Lierta, M. Krenn, A. Aspuru-Guzik, A. Galda,
arXiv:2104.05627 [quant-ph].

**Noisy intermediate-scale quantum (NISQ) algorithms** <div align="right">**Review**</div>
*K. Bharti, A. Cervera-Lierta, T. H. Kyaw, T. Haug, et. al.* <div align="right">*2021*</div>
arXiv:2101.08448 [quant-ph]

**The Meta-Variational Quantum Eigensolver (Meta-VQE):**
**Learning energy profiles of parameterized Hamiltonians for quantum simulation** <div align="right">*2021*</div>
A. Cervera-Lierta, J. S. Kottmann and A. Aspuru-Guzik,
PRX Quantum **2**, 020329 (2021).

**Tequila: A platform for rapid development of quantum algorithms**
*J. S. Kottmann, S. Alperin-Lea, T. Tamayo-Mendoza, A. Cervera-Lierta et. al.* <div align="right">*2021*</div>
Quantum Sci. Technol. **6** 024009

**Data Re-uploading for a Universal Quantum Classifier**
*A. Pérez-Salinas, A. Cervera-Lierta, E. Gil-Fuster, J. I. Latorre* <div align="right">*2020*</div>
Quantum **4**, 226 (2020).

**Quantum Circuits for Maximally Entangled States**
*A. Cervera-Lierta, J. I. Latorre, D. Goyeneche* <div align="right">*2019*</div>
Physical Review A **100**, 022342 (2019).

**Exact Ising Simulation on a Quantum Computer**
*A. Cervera-Lierta* <div align="right">*2018*</div>
Quantum **2**, 114 (2018).

**Multipartite Entanglement in Spin Chains and the Hyperdeterminant**
*A. Cervera-Lierta, A. Gasull, J. I. Latorre and G. Sierra.* <div align="right">*2018*</div>
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* <div align="right">*2017*</div>
SciPost Phys. **3**, 036 (2017).

**Operational Approach to Bell Inequalities: Application to qutrits**
*D. Alsina, A. Cervera, D. Goyeneche, J. I. Latorre and K. Zyczkowski* <div align="right">*2016*</div>
Phys. Rev. A **94**, 032102 (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** <div align="right">**CERN**</div>
*Perspectives on Quantum Sensing and Computation for Particle Physics* <div align="right">*Jul 15, 2021*</div>

**The Chronicles of Entangland, the foundation of the SC town** <div align="right">**IBM**</div>
*Qiskit Europe Hackathon* <div align="right">*May 26, 2021*</div>

**The Meta-Variational Quantum Eigensolver** <div align="right">**Oxford Quantum Information Society**</div>
<div align="right">*May 20, 2021*</div>

**Experimental high-dimensional GHZ entanglement with** <div align="right">**Chicago Quantum Exchange**</div>
**superconducting transmon qutrits**, Pulse-level Quantum Control Workshop <div align="right">*May 18, 2021*</div>

**Maximal entanglement in High-Energy physics** <div align="right">**APS**</div>
*9th Biennial Workshop of the APS Topical Group on Hadronic Physics* <div align="right">*Apr 15, 2021*</div>

**The Meta-Variational Quantum Eigensolver** <div align="right">**APS**</div>
*March Meeting* <div align="right">*Mar 18, 2021*</div>

**Noisy Intermediate-Scale Quantum algorithms** <div align="right">**Académie Royale de Belgique**</div>
*Belgian Quantum Physics Initiative colloquium* <div align="right">*Mar 4, 2021*</div>

**Please, feed the quantum troll!** <div align="right">**Xanadu Quantum Computing**</div>
*Q-Hack* <div align="right">*Feb 19, 2021*</div>

**Data re-uploading for a universal quantum classifier**                    **Zapata Computing**
*Quantum Techniques in Machine Learning*                                      *Nov 12, 2020*

***Maximal Entanglement in High Energy Physics***                         **CFSN Stony Brook, NY**
*Workshop on Quantum Entanglement at Collider Energies.*                       *Sep 11, 2018*

## Courses and Schools

**Variational Quantum Computing**                    **Universidad Internacional Menéndez-Pelayo**
*Summer School on Quantum and Q-Inspired Computing*                            *Sep 7, 2021*

**Noisy Intermediate-Scale Quantum Algorithms**                              **Warsaw, Poland**
*Summer School "Machine Learning in Quantum Physics and Chemistry"*            *Aug 25, 2021*

**Quantum Computing in the NISQ era**                                                  **UCL**
*Talk in Quantum Technologies Winter School*                                  *Dec 10, 2020*

**Bojos per la Supercomputació**                                                       **BSC**
*Introductory course in quantum computation for high-school students*     *26 Apr – 04 May, 2019*

***The Quantum Revolution***                                        **ESADE Business School**
*Seminar at Master in Finance*                                                *Jun 07, 2018*

## Outreach

Mentorship programs...................................................................................

**Quantum Open Source Foundation mentorship program**                                 **QOSF**
*Mentor*                                                                  *Sep 2020 – Jan 2021*

**Girls E-Mentorship program**                                                        **GEM**
*Mentor*                                                                 *Sep 2020 – June 2021*

Pannels.............................................................................................

**Quantum Software Ecosystem**                                              **IEEE Services**
*Pannel discussion with industry and academic members*                        *Sep 9 2021*

**Women in Physics path**                                          **Universitat de Barcelona**
*Organized by the Equality commission from the Physics Faculty*               *Mar 3 2021*

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 – 2019*

Selected Talks.....................................................................................

A selection of some popular science talks and contributions.

***Quantum Calling***                                        **K-W Quantum Enthusiasts Meetup**
*Waterloo Quantum Meet-up*                                                    *Jun 18, 2020*

***Quantica***                                                                       **CCCB**
*Quantum computing talk and participation in the exhibition (video)*       *Apr 10-Sep 26, 2019*

***De las computadoras a los ordenadores***                **Margarita Salas Honoris Causa PhD event**
*Badajoz, Spain*                                                              *Feb 26, 2019*

***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*

## 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).