

Education

- 2018-2022 **University of Barcelona.**
PhD in Quantum Computation and Quantum Information.
Supervisor: Prof. Dr José I. Latorre
- 2016-2017 **Institute of Photonic Sciences (ICFO).**
MSc in Photonics specializing in Quantum Physics.
- 2012-2016 **University of Barcelona.**
BSc in Physics.

Experience

Research

- 2022- **Freie Universität Berlin, Postdoctoral Researcher**, Berlin, Germany.
Near-term quantum computing and quantum-assisted machine learning.
Jens Eisert's group.
- 2020-2022 **Technology Innovation Institute, Associate Researcher**, Abu Dhabi, UAE.
Research and software development for quantum algorithms.
- 2019 **Los Alamos National Laboratory, Fellowship**, Los Alamos, USA.
Quantum algorithms for linear systems of equations.
Patrick J. Coles' group.
- 2018-2020 **Barcelona Supercomputing Center, Research Engineer**, Barcelona, Spain.
Variational quantum algorithms.

Visitor

- Jul-Aug 2022 **Centre for Quantum Technologies**, National University of Singapore, Singapore.

Journal Publications

- 2022 Mirko Consiglio, Wayne J. Chetcuti, **Carlos Bravo-Prieto**, Sergi Ramos-Calderer, Anna Minguzzi, José I. Latorre, Luigi Amico, and Tony J. G. Apollaro, Variational quantum eigensolver for $SU(N)$ fermions, *Journal of Physics A: Mathematical and Theoretical* 55, 265301.
- 2022 Sergi Ramos-Calderer, **Carlos Bravo-Prieto**, Ruge Lin, Emanuele Bellini, Marc Manzano, Nawja Aaraj, and José I. Latorre, Solving systems of boolean multivariate equations with quantum annealing, *Physical Review Research* 4, 013096.
- 2021 Stavros Efthymiou, Sergi Ramos-Calderer, **Carlos Bravo-Prieto**, Adrián Pérez-Salinas, Diego García-Martín, Artur Garcia-Saez, José I. Latorre and Stefano Carrazza, Qibo: a framework for quantum simulation with hardware acceleration, *Quantum Science and Technology* 7, 015018.
- 2021 **Carlos Bravo-Prieto**, Quantum autoencoders with enhanced data encoding, *Machine Learning: Science and Technology* 2, 035028.
- 2020 Sergi Ramos-Calderer, Adrián Pérez-Salinas, Diego García-Martín, **Carlos Bravo-Prieto**, Jorge Cortada, Jordi Planagumà, and José I. Latorre, Quantum unary approach to option pricing, *Physical Review A* 103, 032414.
- 2020 **Carlos Bravo-Prieto**, Josep Lumbreras-Zarapico, Luca Tagliacozzo, and José I. Latorre, Scaling of variational quantum circuit depth for condensed matter systems, *Quantum* 4, 272.
- 2020 **Carlos Bravo-Prieto**, Diego García-Martín, and José I. Latorre, Quantum singular value decomposer, *Physical Review A* 101, 062310.

- 2020 Adrián Pérez-Salinas, Diego García-Martín, **Carlos Bravo-Prieto**, and José I. Latorre, Measuring the tangle of three-qubit states, *Entropy*, 22, 436.

Pre-Print Publications

- [In preparation] **Carlos Bravo-Prieto**, Luca Tagliacozzo, and José I. Latorre, Finite-depth scaling of infinite quantum circuits for 2D quantum systems at criticality, anticipated 2022.
- 2021 **Carlos Bravo-Prieto**, Julien Baglio, Marco Cé, Anthony Francis, Dorota M. Grabowska, and Stefano Carrazza, Style-based quantum generative adversarial networks for Monte Carlo events, *arXiv:2110.06933*, under consideration for *Quantum*.
- 2019 **Carlos Bravo-Prieto**, Ryan LaRose, Marco Cerezo, Yigit Subaşı, Lukasz Cincio and Patrick J. Coles, Variational quantum linear solver, *arXiv:1909.05820*, under consideration for *Physical Review X*.

Programming Languages

- Classical Python, Fortran, Matlab, Mathematica.
- Quantum Qibo (TII), Qiskit (IBM), Cirq (Google), Pyquil (Rigetti computing).

Software Development

- Qibo**, <https://github.com/qiboteam/qibo>, Developer.
Framework for quantum simulation with hardware acceleration.
- Qiskit**, <https://github.com/qiskit-community>, Contributor.
Implemented arithmetic operations as quantum circuits.

Awards and Honors

- 2022 **PhD Excellent Cum Laude**, *University of Barcelona*.
- 2019 **Quantum computing Summer School Fellowship**, *Los Alamos National Laboratory*.
1/20 awarded internationally.
- 2019 **Unitary Fund Grant**.
\$2k for open-source quantum software development.
- 2018 **IBM Teach me Qiskit Award**, *Top contributions*.
Implemented quantum networks for arithmetic operations, from addition to modular exponentiation.

Presentations

- 2022 **CTP-PAS Quantum Information and Quantum Computing Seminars**.
Variational quantum architectures for linear algebra applications.
- 2022 *[Invited talk]* **IPAM's Quantum Numerical Linear Algebra Workshop**.
Variational quantum architectures for linear algebra applications.
- 2021 **Snowmass Workshop on Quantum Computing for High-Energy Physics**.
Style-based quantum generative adversarial networks for Monte Carlo events.
- 2020 **Quantum Computing Theory in Practice**.
[Poster] Variational quantum linear solver.
- 2020 **APS March Meeting**.
Variational quantum linear solver.
- 2019 **Los Alamos National Laboratory Student Symposium**.
Variational quantum linear solver.
- 2019 *[Invited talk]* **IBM Quantum Computing Workshop**.
Quantum singular value decomposer.

- 2019 **V Pyrenees Quantum Information Winter School.**
Scaling of variational quantum circuit depth for condensed matter systems.

Panels

- 2021 **Snowmass Workshop on Quantum Computing for High-Energy Physics.**
Panel discussion with industry and academic members.

Conferences and Workshops Attended

- 2022 **Quantum Matter International Conference, CSIC.**
2022 **Entanglement in Action Workshop, Centro de Ciencias de Benasque.**
2021 **Snowmass Workshop on Quantum Computing for High-Energy Physics, Oak Ridge National Laboratory.**
2021 **Perspectives on Quantum Sensing and Computation for Particle Physics, CERN.**
2020 **Quantum Techniques in Machine Learning, Zapata Computing.**
2020 **Quantum Computing Theory in Practice, Cambridge Centre for Mathematical Sciences.**
2020 **March Meeting, APS.**
2019 **Quantum Machine Learning Workshop, ICFO.**
2019 **Conference on Quantum simulation and Computation, CSIC.**
2019 **Quantum Computing Summer School, Los Alamos National Laboratory.**
2019 **5th Conference on Quantum Information in Spain, ICFO.**
2019 **Quantum Computing Workshop, IBM.**
2019 **Quantum Computing Theory in Practice, University of Bristol.**
2019 **V Pyrenees Quantum Information Winter School, ICFO.**
2018 **Summer School on Experimental Quantum Computation, Centro de Ciencias de Benasque.**
2018 **Multipartite Entanglement Workshop, Centro de Ciencias de Benasque.**

Referee for Journals

Quantum
Physical Review A
Physical Review Research
Machine Learning: Science and Technology