

Adrián Franco-Rubio

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- CAREER** **Max Planck Institute for Quantum Optics**, Garching, Germany
Postdoctoral Researcher (from September 2020). Humboldt fellow (from September 2021).
- EDUCATION** **Perimeter Institute for Theoretical Physics & University of Waterloo**, Waterloo, Canada
Ph.D. Physics, 2020. *Supervisor:* Guifré Vidal
M.Sc. Physics, 2016. *Supervisor:* Guifré Vidal
Universidad de Zaragoza, Zaragoza, Spain
B. Sc. Mathematics, 2016 (GPA 9.92/10). *Supervisor:* Daniel Gottesman (Perimeter Institute)
B. Sc. Physics, 2015 (GPA 9.90/10). *Supervisors:* Jesús Clemente Gallardo and José Cariñena
- PUBLICATIONS** A.F.R., J. Ignacio Cirac, *Gaussian matrix product states cannot efficiently approximate critical systems*, 2022. [arXiv:[2204.02478](https://arxiv.org/abs/2204.02478)]
A.F.R., *Entanglement renormalization for quantum fields with boundaries and defects*, Phys. Rev. B 104, 125131. [arXiv:[2103.07463](https://arxiv.org/abs/2103.07463)]
Q. Hu, A.F.R., G. Vidal, *Emergent universality in critical quantum spin chains: entanglement Virasoro algebra*, 2020. [arXiv:[2009.11383](https://arxiv.org/abs/2009.11383)]
A.F.R., G. Vidal, *Entanglement renormalization for gauge invariant quantum fields*, Phys. Rev. D 103, 025013. [arXiv:[1910.11815](https://arxiv.org/abs/1910.11815)]
Q. Hu, A.F.R., G. Vidal, *Continuous tensor network renormalization for quantum fields*, 2018. [arXiv:[1809.05176](https://arxiv.org/abs/1809.05176)]
A.F.R., G. Vidal, *Entanglement and correlations in the continuous multi-scale entanglement renormalization ansatz*, J. High Energ. Phys. (2017) 12, 129. [arXiv:[1706.02841](https://arxiv.org/abs/1706.02841)]
- SELECTED TALKS** Physical Sciences Seminar, Institute for Science and Technology Austria, 2020
(*Slides and recordings for some of my talks are available on my website*)
Quantum@X seminar, X, the moonshot factory, Mountain View, United States, 2019
Quantum Group seminar, University of Ghent, Belgium, 2019
QuSoft seminar, University of Amsterdam, The Netherlands, 2019
Theory Group seminar, Max Planck Institute for Quantum Optics, Germany, 2019
Conference talk, *Quantum Information and String Theory*, Yukawa Institute, Japan, 2019
Gravity, Quantum Fields and Information virtual seminar, Albert Einstein Institute Potsdam, 2019
Short talk, *PI Day*, Perimeter Institute, Canada, 2017
Conference talk, *Theory Canada 12*, York University, Canada, 2017
Relativistic Quantum Information Group seminar, Institute for Quantum Computing, Canada, 2015

TEACHING
EXPERIENCE

Max Planck Institute for Quantum Optics, Garching, Germany

Tutor for an undergraduate summer intern (La Pedrera Foundation), 2021

Perimeter Institute for Theoretical Physics & University of Waterloo, Waterloo, Canada

Teaching Assistant for PHYS 601 (*Quantum Field Theory I*, PSI Masters Program), 2018

Teaching Assistant for PHYS 111 (*Physics I*, first-year undergrad mechanics), 2018

Research Project Assistant for a project on Monte Carlo Techniques, PSI Winter School, 2017

Universidad de Zaragoza, Zaragoza, Spain

Regional and National Mathematical Olympiad trainer for high school students, 2011-2014

SELECTED SCHOOLS,
CONFERENCES AND
WORKSHOPS
ATTENDED

Quantum Information Theory Program, Ignacio Cirac Lab, IFT-ICMAT, Madrid, 2019

Prospects in Theoretical Physics: Great problems in biology for physicists, IAS Princeton, 2019

Quantum Information, Centro de Ciencias de Benasque Pedro Pascual, 2017 and 2019

CIMPA Research School on Quantum Symmetries, Universidad de los Andes, Bogotá, 2019

Quantum Information and String Theory, Yukawa Institute for Theoretical Physics, Kyoto, 2019

17th NCGOA Spring Institute “Algebra and Geometry Quantized and Quantified”, Vanderbilt, 2019

Quantum Matter: Emergence and Entanglement III, Perimeter Institute, 2019

International Congress of Mathematical Physics + Young Researchers Symposium, Montréal, 2018

Subfactors: Planar algebras, quantum symmetries, and random matrices. Mathematical Sciences Research Institute, Berkeley, 2017

It from Qubit Summer School, Perimeter Institute, 2016

Utrecht Summer School in Theoretical Physics, Universiteit Utrecht, 2014

SELECTED HONORS
AND AWARDS

Humboldt Research Fellowship, Alexander von Humboldt Foundation, 2021

National Award for Excellence in Academic Performance, Spanish Government, (awarded twice: 2018 in Physics, 2020 in Mathematics)

AGM Award to the Best Academic Record in Science, University of Zaragoza, (awarded twice: B.Sc. in Physics, 2015, and B.Sc. in Mathematics, 2016)

La Caixa Graduate Studies Fellowship (highly competitive graduate scholarship), 2015

5th place, II PLANCKS Physics League, Leiden, The Netherlands. Spanish Team Leader, 2015

Absolute Winner, Barcelona Tech Mathematical Competition for University Students, 2015

Two Second Prizes and a Third Prize at the XIX, XX and XXI International Mathematical Competition for University Students, Blagoevgrad, Bulgaria, 2012, 2013, 2014

Silver Medal, 42nd International Physics Olympiad (IPhO), Bangkok, Thailand, 2011

Gold Medal (Subchampion), 15th Ibero-American Physics Olympiad Panama, 2010

HUMAN LANGUAGES

Spanish (native), English (proficient), French (proficient), German (proficient)

COMPUTER
LANGUAGES

Mathematica, Julia (advanced) C, C++, Python, Fortran, Matlab (basic)