

CURRICULUM VITAE

PERSONAL INFORMATION

Full Name	Marco Vinicio Sebastián Cerezo de la Roca
Country and Date of Birth	Guatemala Ciudad, Guatemala. 06/07/1989
Address	3920 Trinity Dr, Unit B, Los Alamos, NM. 87544
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AREA OF RESEARCH

Area of Research	Quantum Information, Quantum Computation, Quantum Correlations, Many-body systems, Condensed Matter, Quantum Algorithms,
Specific topic of interest	Spin systems, factorizing fields, entanglement, quantum correlations, criticality, quantum algorithms, NISQ devices, classical-quantum hybrid algorithms

CURRENT POSITION

2019-2020	Postdoctoral Research Associate, Los Alamos National Institute. T-4 Theoretical Division / CNLS. Mentor: Dr. Patrick Coles
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PREVIOUS POSITION

2015-2019	CONICET Fellow at the Instituto de Física La Plata (IFLP), Buenos Aires, Argentina.
2013-2019	Teacher's Assistant at the Universidad Nacional de la Plata, Buenos Aires, Argentina.

I. EDUCATION

Bachelor's Degree:

2009-2015	Licenciate in Physics, Facultad de Ciencias Exactas, Universidad Nacional de la Plata, Argentina (Equivalent to a M.Sc. in North American universities).
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Postgraduate studies:

2015-2018	Ph.D. in Physics of the Faculty of Exact Sciences, Universidad Nacional de la Plata, Buenos Aires, Argentina.
2015-	Specialist in University Teaching. Universidad Nacional de la Plata, Buenos Aires, Argentina.

II. PUBLICATION LIST:

Publications in International Refereed Journals:

- 2019 | “Strong bound between trace distance and Hilbert-Schmidt distance for low-rank states”
Patrick J. Coles, M. Cerezo, Lukasz Cincio
[arXiv:1903.11738](https://arxiv.org/abs/1903.11738)
- 2018 | “Inducing critical phenomena in spin chains through sparse alternating fields”
M. Cerezo, R. Rossignoli, N. Canosa, and C. A. Lamas. Phys. Rev. B **99**, 014409 (2019).
<https://journals.aps.org/prb/abstract/10.1103/PhysRevB.99.014409>
- “Factorization and criticality in spin systems”
Marco Cerezo, PhD Thesis. Approved with a Special Mention.
[DISS: Facultad de Ciencias Exactas, 2018.](https://diss.fce.unam.mx/handle/123456789/12345)
- 2017 | “Factorization and criticality in finite XXZ systems of arbitrary spin”,
M. Cerezo, R. Rossignoli, N. Canosa and E. Ríos. Phys. Rev. Lett. **119**, 220605 (2017).
<https://doi.org/10.1103/PhysRevLett.119.220605>
- 2016 | “Factorization in spin systems under general fields and separable ground-state engineering”
M. Cerezo, R. Rossignoli, and N. Canosa, Phys. Rev. A **94**, 042335 (2016).
<https://doi.org/10.1103/PhysRevA.94.042335>
- “System-time entanglement in a discrete-time model”,
A. Boette, R. Rossignoli, N. Gigena, and M. Cerezo, Phys. Rev. A **93**, 062127 (2016).
<https://doi.org/10.1103/PhysRevA.93.062127>
- 2015 | “Non-transverse factorizing fields and entanglement in finite spin systems”,
M. Cerezo, R. Rossignoli, and N. Canosa, Phys. Rev. B **92**, 224422 (2015).
<https://doi.org/10.1103/PhysRevB.92.224422>

Book Chapters:

- 2017 | “Quantum Discord and Entropic Measures of Quantum Correlations: Optimization and Behavior in Finite”,
N. Canosa, M. Cerezo, N. Gigena and R. Rossignoli.
In “Lectures on General Quantum Correlations and their Applications”, Springer International Publishing AG, 2017.
<https://doi.org/10.1007/978-3-319-53412-1>

Teaching Publications:

- 2017 | “Inclusión de la computadora cuántica IBM 5Q Quantum Experience como recurso didáctico para la realización de experimentos y simulaciones con alumnos de la Licenciatura en Física.”
 (“Using IBM 5Q Quantum Experience quantum computer as a teaching resource for the realization of experiments and simulations with physics students.”)
M. Cerezo. 1ra Jornada Sobre Enseñanza Y Aprendizaje En El Nivel Superior En Ciencias Exactas Y Naturales.

III. FELLOWSHIPS

09/2014-09/2015	<i>Becas Estímulo A Las Vocaciones Científicas. Convocatoria 2014 (Scientific Vocation Incentive Scholarship).</i> Place of work: Instituto de Física de la Plata (IFLP-CONICET) Area of research: Quantum correlations in spin systems Advisor: Dr. Raul Rossignoli
09/2015-12/2015	<i>Becas Para Relevamiento De Problemáticas Enseñanza/Aprendizaje Del Espacio Pedagógico, (Scholarship to Study the Teaching/Learning Problems at the Department of Physics, Faculty of Exact and Natural Sciences of the Universidad Nacional de la Plata).</i> Place of work: Department of Physics, Faculty of Exact and Natural Sciences of the Universidad Nacional de la Plata. Area of research: Study the Teaching/Learning Problems at the Department of Physics. Advisor: Department of General Pedagogy, Faculty of Exact and Natural Sciences of the Universidad Nacional de la Plata.
04/2015-01/2019	<i>Beca Interna Doctoral (CONICET Doctoral Fellowship).</i> Place of work: Instituto de Física de la Plata (IFLP-CONICET) Area of research: Criticality and Quantum correlations in spin systems Advisor: Dr. Raul Rossignoli Dr. Norma Canosa

IV. TEACHING EXPERIENCE

05/2018-	Teaching Assistant at the Department of Physics, Faculty of Exact and Natural Sciences of the Universidad Nacional de la Plata.
10/2015-03/2018	Teaching Assistant at the Department of Physics, Faculty of Exact and Natural Sciences of the Universidad Nacional de la Plata.
03/2014-08/2014	Teaching Assistant at the Department of Mathematics, Faculty of Exact and Natural Sciences of the Universidad Nacional de la Plata.
03/2013-02/2016	Teaching Assistant at the Faculty of Engineering of the Universidad Nacional de la Plata.

Other teaching experience:

2009-2015 | Mathematics and physics tutor.

V. ATTENDANCE TO SEMINARS AND CONFERENCES, RESEARCH VISITS:

International Schools and Workshops:

2019	<i>Quantum Computing Summer School</i> Los Alamos, New Mexico, USA. Duration: 3 weeks.
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| 2018 | <i>Summer School on Collective Behavior in Quantum Matter</i>
Abdus Salam International Centre for Theoretical Physics (ICTP), Trieste, Italy
Duration: 20 days. |
| 2017 | <i>VI Quantum Information School and Workshop (Poster).</i>
Paraty, Rio de Janeiro, Brazil.
Duration: 11 days. |
| 2015 | <i>V Quantum Information School and Workshop (Poster).</i>
Paraty, Rio de Janeiro, Brazil.
Duration: 11 days. |

Special Invitations to Workshops, Schools and Symposiums:

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| 2018 | Invited Speaker to the workshop on: <i>Exactly Solvable Quantum Chains.</i>
International Institute of Physics, Natal, RN- Brazil.
Duration: 15 days. |
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Research Visits:

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| 2018 | Short research visit to Ruđer Bošković Institute, Zagreb, Croatia
Invited by: Dr. S. M. Giampaolo
Duration: 10 days. |
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Workshops, Seminars and Conferences (past 2 years):

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| 2018 | <i>XVI Congreso Regional De Física Estadística Y Aplicaciones A La Materia Condensada (TREFEMAC) (Talk)</i>
Universidad Nacional de Mar del Plata, Mar del Plata, Argentina.

<i>1er Taller Argentino de Cuántica –CUANTOS 2018 (Poster)</i>
Facultad de Matemática, Astronomía, Física y Computación de la Universidad Nacional de Córdoba (FAMAF), Córdoba, Argentina.

<i>IV Jornada de Lógica, Computación e Información Cuántica.</i>
Universidad Nacional de Quilmes, Buenos Aires, Argentina.

<i>Noveno encuentro de Becarios del IFLP (Talk).</i>
Instituto de Física de La Plata, Buenos Aires, Argentina. |
| 2017 | <i>102ª Reunión Nacional de la Asociación Física Argentina (Talk, Poster).</i>
La Plata, Buenos Aires, Argentina.

<i>1ras Jornadas Sobre Enseñanza Y Aprendizaje En El Nivel Superior En Ciencias Exactas Y Naturales .</i>
Universidad nacional de La Plata, La Plata, Buenos Aires, Argentina.

<i>VI Quantum Information School and Workshop (Poster).</i>
Paraty, Rio de Janeiro, Brasil. |

VI. OTHER PROFESSIONAL ACTIVITIES:

In Universities:

03/2016-12/2018	Member of the Web Page Commission of the Department of Physics, Faculty of Exact and Natural Sciences of the Universidad Nacional de la Plata.
10/2016-11/2016	Member of the Commission for selecting teachers for the introductory courses of the Department of Physics, Faculty of Exact and Natural Sciences of the Universidad Nacional de la Plata.
2013-2015	Member of the Optative Courses of the Department of Physics, Faculty of Exact and Natural Sciences of the Universidad Nacional de la Plata.

In Scientific Institutions:

2017-2018	Member of the Directors Board of the Instituto de Física de la Plata.
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In other Professional Institutions:

2016-	<i>Creator of the Blog: "Entangled Physics: Quantum Information & Quantum Computation"</i> This blog is dedicated to anyone who is interested in studying Quantum Information and Quantum Computation. Here you will be able to take a behind-the-scenes tour of the fascinating research that gets done in these fields of study. http://entangledphysics.com/
2015-	<i>Founding member of BarcelonaQbit.</i> Barcelonaqbit is a think tank founded at the CERN (Geneva) on January, 29th 2015. Our main focus is evaluating the social and economic impact of the quantum information, its go-to-market and its business opportunities. http://www.barcelonaqbit.com/ <i>International Partner in Argentina and Member of the Science Advisory Board at BarcelonaQbit.</i>
2009-	<i>Member of the General Assembly of the Foundation for Ecodevelopment and Conservation (FUNDAECO).</i>

VII. AWARDS

2015	<i>Joaquin V. Gonzales Award.</i> Awarded by the Municipality of the city La Plata to the best students of the Universidad Nacional de la Plata (UNLP). <i>Special Mention in the 2015 edition of the Masperi Price.</i> By the Argentina Physics Association (AFA). <i>Patria Grande Award for Latin American students that have an outstanding performance in one of the faculties that make up the Universidad Nacional de la Plata.</i> For getting on of the top GPA of the Faculty of Exact and Natural Sciences of the Universidad Nacional de la Plata. Awarded by the Subsecretaría de Entidades y Colectividades de la Municipalidad de La Plata.
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2007	<i>Award for Academic Excellence.</i> Lycee Francais Jules Verne, Guatemala (2007).
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VIII. LANGUAGES:

Language: Spanish (native)

Language: French (native)

Proficiency: Full professional proficiency

Certificate: Baccalauréat Français, Lycee Francais Julio Verne Guatemala (2007).

Language: English

Proficiency: Full professional proficiency

Certificate: Baccalauréat Français, Lycee Francais Julio Verne Guatemala (2007).

Language: Portuguese

Proficiency: Professional Working Proficiency

Certificate: Universidad Nacional de la Plata (UNLP).

IX. SOCIAL AND / OR COMMUNITY SERVICES:

2012-2013	TECHO Coordinator, Detection and Assignment, at the Puente de Fierro neighborhood, La Plata, Buenos Aires, Argentina
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2011-2012	<i>TECHO Volunteer</i> TECHO is a Latin-American non-profit organization led by youth volunteers that works in slums found across the continent with a focus on: Community Development, the search for Political Advocacy, and the promotion of Social Action. This work is carried out with the support of volunteers, who make a commitment with the reality of their country, and bet on the fact that a change is possible.
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2007	<i>Project Coordinator for the reconstruction of a rural school destroyed in an area affected by Hurricane Stan in Guatemala (2007).</i>
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