

CV – João F. Doriguello

João Fernando Doriguello Diniz (Brazilian) / João Fernando da Silva Doriguello (Spaniard), 31 years old
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FORMAL EDUCATION

- Mar. 2021 - **Research Fellow**
Ongoing Centre for Quantum Technologies, National University of Singapore, Singapore
Advisor: Prof. Dr. Miklos Santha
- Sep. 2016 - **Ph.D in Physics (Quantum Engineering CDT)**
Sep. 2021 University of Bristol, Bristol, United Kingdom
Title: Quantum Communication Complexity
Advisor: Prof. Dr. Ashley Montanaro
Grades (from 0 to 100): Quantum Information (94), Quantum Computation (97),
Quantum Optics (90).
- Mar. 2014 – **Master's in Physics**
Jun. 2016 University of Campinas (UNICAMP), Campinas, Brazil
Average weighted grade (from 0.0 to 4.0): 4.0
Title: Implementation of Two-Dimensional Quantum Walks
Advisor: Dr. Marcos César de Oliveira
- Mar. 2010 – **B.Sc. Degree in Physics**
Dec. 2013 University of Campinas (UNICAMP), Campinas, Brazil
Average weighted grade (from 0.0 to 1.0): 0.9731
Monograph Title: Study of Fluctuation Relations in Non-equilibrium Statistical
Mechanics
Advisor: Prof. Dr. Alex Antonelli

PUBLICATIONS

- João F. Doriguello, Alessandro Luongo, Jinge Bao, Patrick Reberntrost and Miklos Santha. **“Quantum algorithm for stochastic optimal stopping problems with applications in finance.”** arXiv preprint arXiv:2111.15332 (2021) (to appear in TQC 2022).
- Srinivasan Arunachalam and João F. Doriguello. **“Matrix hypercontractivity, streaming algorithms and LDCs: the large alphabet case.”** arXiv preprint arXiv:2109.02600 (2021).
- João F. Doriguello and Ashley Montanaro. **“Quantum Random Access Codes for Boolean Functions.”** Quantum 5 (2021): 402.
- João F. Doriguello and Ashley Montanaro. **“Exponential Quantum Communication Reductions from Generalizations of the Boolean Hidden Matching Problem.”** 15th Conference on the Theory of Quantum Computation, Communication and Cryptography (TQC 2020). Schloss Dagstuhl-Leibniz-Zentrum für Informatik, 2020.
- J.F. Doriguello and A. Montanaro. **“Quantum sketching protocols for Hamming distance and beyond.”** Physical Review A 99.6 (2019): 062331.

EVENTS

- Apr. 2019 **Local Organising Committee in Quantum Computing Theory in Practice 2019**
- Jun. 2018 –
Mar. 2019 **Quantum Innovation Lab (QIL) 2019**
Organized the Quantum Innovation Lab (QIL) 2019 event, a collaborative event between industry partners and academics. Participating companies: Microsoft, Siemens, Jisc, GSK, Gemalto, Airbus, NPL, Fraunhofer CAP.

CONFERENCES

2022

- Talk in 17th Conference on the Theory of Quantum Computation, Communication and Cryptography (TQC) at The University of Illinois at Urbana-Champaign, USA.
- Poster in 25th Annual Conference on Quantum Information Processing (QIP), Los Angeles, USA, titled “Quantum algorithm for stochastic optimal stopping problems with applications in finance”.

2020

- Poster in 23rd Annual Conference on Quantum Information Processing (QIP), Shenzhen, China, titled “Exponential quantum communication reductions from generalizations of the Boolean Hidden Matching problem”.
- Talk in 15th Conference on the Theory of Quantum Computation, Communication and Cryptography (TQC) at the University of Latvia, Riga, Latvia.

2019

- Poster in 22nd Annual Conference on Quantum Information Processing (QIP), Boulder, USA, titled “Quantum sketching protocols for Hamming distance and beyond”.
- Poster in Quantum Computing Theory in Practice 2019, Bristol, UK, titled “Quantum sketching protocols for Hamming distance and beyond”.
- Talk in 2nd QuantAlgo Workshop, Amsterdam, titled “Exponential quantum communication reductions from generalisations of the Boolean Hidden Matching problem”.

2018

- Talk in 1st QuantAlgo Workshop, Paris, titled “Quantum sketching protocols for Hamming distance and beyond”.

2012

- João F. Doriguello, Ary O. Chiacchio, **Topics in Number Theory**, Poster in XX UNICAMP Internal Congress of Scientific Initiation, Campinas, Brazil.

HONOURS AND AWARDS

- 2017 Boeing Prize for best academic achievement among the students from Cohort 3 of the Quantum Engineering Center for Doctoral Training at the University of Bristol
- 2012 Silver Medal in the 2012 IFT-ICTP Prize for Young Physicists
- 2012 FAPESP Scientific Initiation Scholarship
Merit-based funding for students to develop scientific or technological research
- 2011 PIBIC/CNPq Scientific Initiation Scholarship
Merit-based funding for students to develop scientific or technological research

2011	Honorable Mention in the 33 rd Brazilian Mathematical Olympiad (OBM), University Level
2009	Silver Medal in the XII Brazilian Olympiad of Astronomy and Astronautics (OBA)
2009	Honorable Mention in the 2009 Brazilian Physics Olympiad (OBF), 3 rd year
2009	Gold Medal in the 6 th Mathematical Olympiad of the ABC Region (OMABC), Level 4
2009	Gold Medal in the 3 rd OSA Physics Olympiad in UNICAMP, 3 rd year
2008	Silver Medal in the XI Brazilian Olympiad of Astronomy and Astronautics (OBA)
2008	Gold Medal in the 2 nd OSA Physics Olympiad in UNICAMP, 2 nd year
2007	Bronze Medal in the 4 th Mathematical Olympiad of the ABC Region (OMABC), Level 3
2006	Silver Medal in the 3 rd Mathematical Olympiad of the ABC Region (OMABC), Level 2

PRE-PHD RESEARCH EXPERIENCE

May 2017 – Aug. 2017	<p>Project B / First Year of Quantum Engineering CDT University of Bristol, Bristol, United Kingdom Project: Examining the Scattered Light by a Two-Level System Advisor: Dr. Dara McCutcheon</p> <ul style="list-style-type: none"> Theoretical study of coherence and squeezing properties of the scattered light by a two-level atom using both the atom point of view (Regression Theorem) and the quantization of the scattered field.
Feb. 2017 – Apr. 2017	<p>Project A / First Year of Quantum Engineering CDT University of Bristol, Bristol, United Kingdom Project: Methods for Implementing an Asynchronous Decoder Advisors: Dr. Naomi Nickerson and Dr. Hugo Cable</p> <ul style="list-style-type: none"> Study of general aspects of quantum error correction on the toric code. Final report as the project outcome with a mark of 94.5 (out of 100).
Aug. 2012 – Jul. 2013	<p>Undergraduate Researcher - FAPESP Scientific Initiation Scholarship State University of Campinas, Campinas, Brazil Project: How to quantify the anisotropy of the cosmic microwave background Advisor: Prof. Dr. Pedro Cunha de Holanda</p> <ul style="list-style-type: none"> Study of general aspects of General Relativity and Cosmology, and specialized in the cosmic microwave background.
Aug. 2011 – Jul. 2012	<p>Undergraduate Researcher - PIBIC/CNPq Scientific Initiation Scholarship State University of Campinas, Campinas, Brazil Project: Topics in Number Theory Advisor: Prof. Dr. Ary Orozimbo Chiacchio</p> <ul style="list-style-type: none"> Study of arithmetic functions, special numbers and congruences: Euler, Möbius and Floor functions, Dirichlet product, perfect, amicable and Fibonacci numbers, Wilson, Fermat and Euler theorems.

TEACHING EXPERIENCE

PAD Student (Didactic Program of Support) - Undergraduate Monitor

University of Campinas, Campinas, Brazil

Mar. 2011 – Discipline: Calculus I
Jul. 2011 Supervisor: Prof. Dr. Adriano Adrega de Moura
Class Hours: 8 hours/week

PED Student (Teacher Internship Program) - Graduate Monitor

University of Campinas, Campinas, Brazil

Mar. 2015 – Discipline: Experimental Physics III
Jul. 2015 Supervisor: Prof. Dr. Flávio Caldas da Cruz
Class Hours: 2 hours/week

Aug. 2014 – Discipline: Quantum Mechanics I
Dec. 2014 Supervisor: Prof. Dr. Eduardo Granado Monteiro da Silva
Class Hours: 2 hours/week

Hourly Paid Teaching Contract (Homework marking)

University of Bristol, Bristol, United Kingdom

Feb. 2020 – Discipline: Statistical Mechanics
May 2020 Supervisor: Prof. Dr. Tanniemola B. Liverpool

Feb. 2020 – Discipline: Quantum Computation
May 2020 Supervisor: Prof. Dr. Ashley Montanaro

Oct. 2019 – Discipline: Quantum Information Theory
Dec. 2019 Supervisor: Prof. Dr. Noah Linden

Feb. 2019 – Discipline: Calculus of Variations 3
May 2019 Supervisor: Dr. Yves Tourigny

Feb. 2019 – Discipline: Quantum Computation
May 2019 Supervisor: Prof. Dr. Ashley Montanaro

Oct. 2018 – Discipline: Quantum Information Theory
Dec. 2018 Supervisor: Prof. Dr. Noah Linden

Feb. 2018 – Discipline: Analytical Mechanics
May 2018 Supervisor: Prof. Dr. James Annett

Feb. 2017 – Discipline: Mechanics 23
May 2017 Supervisor: Dr. Isaac V. Chenchiah

TESTS' RESULTS

GRE Test (Subject – Physics), 10/24/2015

Total score: 960

Percentile: 91%

SELECTED SKILLS

Programming languages: C++, Python, MATLAB, Mathematica.