

# Benjamin DM Jones

bdmjones (@) hotmail.co.uk  
[benjaminbones.github.io](https://github.com/benjaminbones)



Dated: 1/07/24.

I excel in adapting, learning, and delivering in new environments, building strong working relationships, and producing valuable and concrete outputs.

My technical expertise lies in software development and a deep understanding of mathematics, physics, and computer science, with a particular emphasis on quantum information and computation.

Current research interests include:

- quantum algorithms
- property testing
- variational algorithms
- quantum measurements
- resource theories

## Education

- Jun 2024  
|  
Sep 2019 **PhD in Quantum Information – University of Bristol, UK.**  
- Research in quantum computation, nonlocality, and measurement incompatibility.  
- Led international collaborations and published in high-impact journals [1-5].  
- Part of the **QE-CDT**, taking advanced theoretical courses and experimental projects.  
- Teaching assistant for quantum information classes, including some lecturing.
- Jun 2018  
|  
Sep 2014 **Integrated Masters in Mathematics – Durham University, UK.**  
- Bachelors and masters combined, specialising in theoretical physics.  
- Part of St Johns College, captained several sports teams and worked in the bar.
- Jun 2017  
|  
Sep 2016 **Year Abroad – Université de Neuchâtel, Switzerland.**  
- Exchange program, taking courses in pure mathematics taught in French.
- Jun 2014  
|  
Sep 2007 **A Levels/GCSEs – Thomas Rotherham College and Aston Academy, UK.**  
- Achieved 14 A\* at GCSE (top in year of ~300 students) and 3A\* and 2A's at A-level (top in year for Physics and awarded the WH Bacon prize).

## Experience

- Present  
|  
Nov 2022 **Quantum Software Consultant – Phasecraft, UK.**  
- Leading a project on optimisers for near-term quantum algorithms following my internship, working approximately one day per week. Publication in progress.
- Oct 2022  
|  
Jun 2022 **Quantum Software Intern – Phasecraft, UK.**  
- Studied classical optimisers (e.g. SPSA, CMAES, Momentum, ADAM) for variational quantum algorithms, supervised by Ashley Montanaro and Lana Mineh.  
- Delivered a 20-page report and presented results to the wider company.
- Jun 2021  
|  
Aug 2020 **Visiting Researcher – Université de Genève, Switzerland.**  
- Paid secondment in the group of Nicolas Brunner, leading international research collaborations in quantum foundations (see [3-5] in publications).
- Sep 2019  
|  
Jul 2019 **Quantum Software Intern – Entropica Labs, Singapore.**  
- Worked on variational quantum algorithms, improved coding and teamwork skills.  
- Delivered a 15-page report with accompanying Python code.
- Jun 2019  
|  
Sep 2018 **Research Assistant – University of Sheffield, UK.**  
- Based in computer science department, working with John Clark and Earl Campbell.  
- Developed software, project management, and collaboration skills.  
- Led a project on machine learning for quantum simulation, leading to a paper [6].

## Skills

**- Programming:**  
Python (NumPy, Pandas, Qiskit, Cirq),  
Git, Bash, LaTeX, Julia, C++.

**- Mathematics:**  
Linear Algebra, Calculus, Quantum  
Mechanics, Statistics, Quantum  
Information and Computation,  
Algorithms, Machine learning.

**- Collaboration:**  
Led and managed international  
research projects, co-organised a  
careers event, volunteering  
experience at a local homeless shelter.

**- Presenting and teaching:**  
Delivered talks at several conferences,  
lectured a graduate level course,  
tutored maths to high school students.

**- Languages:**  
Proficient in French and Spanish.

## Publications

- [1] **B.D.M. Jones** and A. Montanaro.  
"Testing multipartite productness is easier than testing bipartite productness".  
arXiv preprint arXiv:2406.16827 (2024).
- [2] **B.D.M. Jones**, P. Skrzypczyk, and N. Linden.  
"The Hadamard gate cannot be replaced by a resource state in universal quantum computation."  
arXiv preprint arXiv:2312.03515 (2023).
- [3] **B.D.M. Jones**, R. Uola, T. Cope, M. Ioannou, S. Designolle, P. Sekatski, and N. Brunner.  
"Equivalence between simulability of high-dimensional measurements and high-dimensional steering."  
Physical Review A 107 (5), 052425 (2023).
- [4] M. Ioannou, P. Sekatski, S. Designolle, **B.D.M. Jones**, R. Uola, and N. Brunner  
"Simulability of high-dimensional quantum measurements"  
Physical Review Letters 129 (19), 190401 (2022).
- [5] **B.D.M. Jones**, I. Šupić, R. Uola, N. Brunner, and P. Skrzypczyk.  
"Network quantum steering."  
Physical Review Letters 127 (17), 170405 (2021).
- [6] **B.D.M. Jones**, D.R. White, G.O. O'Brien, J.A. Clark, and E.T. Campbell.  
"Optimising Trotter-Suzuki decompositions for quantum simulation using evolutionary strategies."  
Proceedings of the Genetic and Evolutionary Computation Conference, pp. 1223-1231.  
(2019).

Presented talks and posters at multiple international conferences.