Benjamin D.M. Jones

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Quantum computing researcher with expertise in quantum information, optimisation and software development.

Experience leading international research collaborations and contributing to industry-focused quantum computing projects. Strong background in mathematical optimisation, software development (Python), and machine learning fundamentals.

Beyond professional work, I enjoy playing sports, teaching, creating music, and learning languages. Causes I care about include mental health, education, and homelessness.

References

Paul Skrzypczyk
(PhD Supervisor),

Ashley Montanaro
(Phasecraft CEO).

Dated: 19/06/2026.

Education

Jan 2025 | Sep 2019 **PhD in Quantum Information** – *University of Bristol, UK.*
- Main research topics included quantum property testing, gadgets in quantum circuits, high-dimensional entanglement, and quantum steering.
- Led international collaborations and published in high-impact journals [2-6].
- Part of the QE-CDT, taking advanced theoretical courses and experimental projects.
- Teaching assistant and lecturer for quantum information classes.

Jun 2018 | Sep 2014 **Integrated Masters in Mathematics** – *Durham University, UK.*
- Bachelors and masters combined, obtained a high first-class degree classification.
- Part of St Johns College, captained several sports teams and worked in the bar.

Jun 2017 | Sep 2016 **Exchange Program** – *Université de Neuchâtel, Switzerland.*
- Studied advanced pure mathematics courses taught in French.

Experience

Present | Apr 2026 **Postdoctoral Researcher** – *Freie Universität Berlin, Germany.*
- Conducting research in quantum computing under Prof. Dr. Jens Eisert.

Apr 2026 | Jan 2025 **Consultant and Tutor** – *Freelance, Remote.*
- Consulting on quantum computing, training LLMs on PhD level mathematics with *Outlier AI*, and teaching mathematics and music to students of various ages.

Dec 2024 | Jun 2022 **Quantum Software Researcher** – *Phasecraft, UK.*
- Led a project on optimisers (e.g. SPSA, CMAES, Momentum, ADAM) for near-term quantum algorithms (VQE) first as an intern, then as a consultant.
- Performed large-scale numerical experiments, resulting in a publication [1].

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 [4-6] 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 optimisation in quantum simulation, leading to a paper [7].

Skills

- **Programming:**
Proficient in Python (numpy, pandas). Familiar with HPC, Bash, Git, and quantum libraries.

- **Mathematics:**
Linear algebra, calculus, quantum mechanics, probability, quantum information and computation, algorithms and data structures, machine learning.

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

- **Presenting and teaching:**
Delivered conference talks, lectured a graduate course, tutored high school maths, taught music to children.

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

Selected Publications

[1] **B.D.M. Jones**, L. Mineh, and A. Montanaro,
"Benchmarking a wide range of optimisers for solving the Fermi-Hubbard model using the variational quantum eigensolver",
Quantum Science and Technology 10.4 045032 (2025).

[2] **B.D.M. Jones** and A. Montanaro,
"Testing multipartite productness is easier than testing bipartite productness"
Journal of Mathematical Physics 66.5 (2025).

[3] **B.D.M. Jones**, P. Skrzypczyk, and N. Linden,
"The Hadamard gate cannot be replaced by a resource state in universal quantum computation",
Quantum 8, 1470. (2024).

[4] **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).

[5] 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).

[6] **B.D.M. Jones**, I. Šupić, R. Uola, N. Brunner, and P. Skrzypczyk,
"Network quantum steering",
Physical Review Letters 127 (17), 170405 (2021).

[7] **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.