Dr Naomi R. Solomons

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For a reference, please contact Prof Damian Markham, damian.markham@lip6.fr. Further references available (from my PhD supervisors) on request.

Current position

LIP6, Sorbonne University (2024-): since May 2024 I have been working with Prof Damian Markham as a postdoctoral researcher as part of the Quantum Internet Alliance and Quantum Sensor Networks projects.

Education and qualifications

University of Bristol (2019-2024): PhD awarded through the Centre for Doctoral Training in Quantum Engineering (QE-CDT), supervised by Prof Anthony Laing and Dr Dara McCutcheon, entitled *Applications of Gaussian boson sampling in graph theory*.

Durham University (2015-2019): First class honours in M.Sci Natural Sciences (Mathematics and Physics). My Masters project was carried out under the supervision of Prof Alexander Lenz, entitled *Model independent searches for New Physics in the $R(D)$ and $R(D^*)$ flavour anomalies*.

Forest School (2008-2015): A levels: 2 A*, 3 A. Winner of the W. S. Atkins Prize for Academic Achievement (2015), and the Spanish Subject Prize (2014, 2015).

Industry experience

Riverlane: From September to December 2021 I carried out an internship at Riverlane, Cambridge, focused on measurement based quantum computation.

Duality Quantum Photonics: From September 2022 to September 2023 I worked for one day per week at Duality Quantum Photonics, a Bristol-based startup focused on integrated quantum photonic technologies, as a photonics theorist.

Research outputs

Papers

Composable privacy of networked quantum sensing, N. R. Solomons and D. Markham, *arXiv preprint* arXiv:2510.06326

Anonymous and private parameter estimation in networks of quantum sensors, J. de Jong, S. Scheiner, N. R. Solomons, Z. Chaoui, D. Markham and A. Pappa, Phys. Rev. Applied 24, 054053 (2025)

A complexity transition in displaced Gaussian Boson sampling, Z. Li, N. R. Solomons, J. F. F. Bulmer, R. B. Patel and I. A. Walmsley, npj Quantum Inf 11, 119 (2025)

Effect of photonic errors on quantum enhanced dense-subgraph finding, N. R. Solomons, O. F. Thomas and D. P. S. McCutcheon, Phys. Rev. Applied 20, 054043 (2023)

Scalable Authentication and Optimal Flooding in a Quantum Network, N. R. Solomons, A. I. Fletcher, D. Aktas, N. Venkatachalam, S. Wengerowsky, M. Lončarić, S. P. Neumann, B. Liu, Ž. Samec, M. Stipčević, R. Ursin, S. Pirandola, J. G. Rarity, and S. K. Joshi, PRX Quantum 3, 020311 (2022)

Conferences

Talks: QCTiP 2023: *Gaussian-boson-sampling-enhanced dense subgraph finding shows limited advantage over efficient classical algorithms*

ICIQP 2022: *Using Gaussian boson sampling for dense subgraph finding with impure sources and loss*

BQIT 2021: *Scalable authentication and optimal flooding in a quantum network*

Posters: *Using Gaussian boson sampling for dense subgraph finding with impure sources and loss* – this work was presented at Paraty 2023, QIP 2023, and BQIT 2022 (winner of the 'best presenter' prize)

Q-Turn 2020: *Scalable authentication in a quantum network*

Other experience

Paper referee for *Quantum*, *npj Quantum Information*, *Communications Physics* and QIP (conference).

Delivered a tutorial on quantum simulation at the International Summer School for Integrated Quantum Photonics 2023.

Former *Physics World* student contributor.

Member of the Bristol Quantum Information Technologies (BQIT) workshop board 2021.

Teaching and supervision: I helped supervise a Masters (M2) student working on the Quantum Information Alliance project.

Teaching assistant for the Sorbonne Quantum Information (2024 and 2025) and Light-Matter Interactions (2025) Masters courses (both M2), including writing tutorials and exam questions and delivering lectures.

Part-time teaching fellow for the Quantum Information Theory course within the Bristol CDT (2023).

Teaching assistant in second year computing (Python, 2020/21) and first year Maths (2021/22, 2022/23) at the University of Bristol.

Outreach: I helped assess and choose the winner for the Quantum Internet Alliance Application Challenge.

During my PhD I was a Widening Participation tutor, an outreach role delivering workshops in local schools.

Organising, obtaining funding for, and delivering workshops at, Quantum In The Summer, a free week-long summer school for high school students (2021 and 2022).

Other outreach events include: Fête de la Science at the Sorbonne, Pint of Science, Bluedot festival, Stemettes workshops, 'Physics in a Box' at the University of Bristol, 'Debunking Quantum' at the Engine Shed Bristol.

Equality, diversity and inclusion: LIP6 QI team 'Awareness' session lead 2025.

Former member of the QETLabs ED&I committee.

Winner of the University of Bristol Physics department equality and diversity prize 2021.

Organiser of the BQIT EDI panel 2020 and 2021.

Programming: I have used C++, Python, Nim, Mathematica, and ROOT.

Other interests

I enjoy making music, and I have ABRSM Grade 8 in flute (distinction), voice (merit), saxophone, and piano, as well as the advanced ensemble qualification. I enjoy learning languages – I speak Spanish and French to approximately C1 level, and got 93% in the HSK Level 2 in Mandarin Chinese, following self study.