CV – YASSINE HAMOUDI

OVERVIEW

- First/Last name: Yassine Hamoudi
- Postal address: Simons Institute for the Theory of Computing, Office 120, Melvin Calvin Laboratory, #2190, Berkeley, CA 94720, United States
- Email address: `ys.hamoudi@gmail.com`
- Personal website: `https://yassine-hamoudi.github.io/`
- ORCID profile: `https://orcid.org/0000-0002-3762-0612`

Research	My primary research interest is *quantum computing*. I study the impact of quantum mechanics on algorithm design and computational complexity theory. I have contributed to new quantum *algorithms* in diverse areas such as optimization, statistical analysis, streaming data, graph problems and cryptanalysis. I am also interested in new algorithmic and *lower-bound* methods for understanding the interplay between the computational resources available to quantum computers, with a particular focus on time-space tradeoffs.
Teaching	I was a teaching assistant (180 hrs) at Université Paris Cité during my PhD studies.

EMPLOYMENT

Postdoctoral researcher

- University of California, Berkeley – September 2021 to Today.
- *Simons Quantum Postdoctoral Fellow* hosted by Umesh Vazirani.

EDUCATION

Doctoral degree

- IRIF, Université Paris Cité, France – September 2017 to June 2021.
- Supervisors: Frédéric Magniez and Miklos Santha.
- PhD Thesis on "Quantum Algorithms for the Monte Carlo Method".

Bachelor's and Master's Degrees in Computer Science

- Ecole Normale Supérieure de Lyon, France – September 2013 to August 2017.
- Master's Thesis on "Communication Complexity", prepared at Carnegie Mellon University (United States) under the supervision of Anil Ada – January 2016 to June 2016.

PUBLICATIONS

Peer-reviewed conferences

· "A Sublinear-Time Quantum Algorithm for Approximating Partition Functions",
Contributed talk at the 26th Conference on Quantum Information Processing (QIP), 2023.
Proceedings of the 34th Symposium on Discrete Algorithms (SODA), 2023.
Arjan Cornelissen and Yassine Hamoudi.
DOI : 10.1137/1.9781611977554.ch46. ArXiv : 2207.08643.

· "Classical and Quantum Algorithms for Variants of Subset-Sum via Dynamic Programming",
Proceedings of the 30th European Symposium on Algorithms (ESA), 2022.
Jonathan Allcock, Yassine Hamoudi, Antoine Joux, Felix Klingelhöfer and Miklos Santha.
DOI: 10.4230/lipics.esa.2022.6. ArXiv: 2111.07059.

· "Near-Optimal Quantum Algorithms for Multivariate Mean Estimation",
Contributed talk at the 25th Conference on Quantum Information Processing (QIP), 2022.
Proceedings of the 54th Symposium on Theory of Computing (STOC), 2022.
Arjan Cornelissen, Yassine Hamoudi and Sofiene Jerbi.
DOI: 10.1145/3519935.3520045. ArXiv: 2111.09787.

· "Quantum Sub-Gaussian Mean Estimator",
Proceedings of the 29th European Symposium on Algorithms (ESA), 2021.
Yassine Hamoudi.
DOI: 10.4230/lipics.esa.2021.50. ArXiv: 2108.12172.

· "Quantum Time-Space Tradeoff for Finding Multiple Collision Pairs",
Proceedings of the 16th Conference on the Theory of Quantum Computation, Communication and Cryptography (TQC), 2021. **"Outstanding Paper Award"**.
Yassine Hamoudi and Frédéric Magniez.
DOI: 10.4230/lipics.tqc.2021.1. ArXiv: 2002.08944.

· "Quantum Chebyshev's Inequality and Applications",
Proceedings of the 46th International Colloquium on Automata, Languages, and Programming (ICALP), 2019.
Yassine Hamoudi and Frédéric Magniez.
DOI: 10.4230/lipics.icalp.2019.69. ArXiv: 1807.06456.

· "Simultaneous Multiparty Communication Complexity of Composed Functions",
Proceedings of the 43rd International Symposium on Mathematical Foundations of Computer Science (MFCS), 2018.
Yassine Hamoudi.
DOI: 10.4230/lipics.mfcs.2018.14. ArXiv: 1710.01969.

Peer-reviewed journals

· "Preparing Many Copies of a Quantum State in the Black-Box Model",
Physical Review A, 2022.
Yassine Hamoudi.
DOI: 10.1103/physreva.105.062440. ArXiv: 2207.11014.

· "Quantum Algorithms for Hedging and the Learning of Ising Models",
Physical Review A, 2021.
Patrick Rebentrost, Yassine Hamoudi, Maharshi Ray, Miklos Santha, Xin Wang and Siyi Yang.
DOI: 10.1103/physreva.103.012418. ArXiv: 2002.06003.

· "Quantum and Classical Algorithms for Approximate Submodular Function Minimization",
Quantum Information & Computation, 2019.
Yassine Hamoudi, Patrick Rebentrost, Ansis Rosmanis and Miklos Santha.
DOI: 10.26421/qic19.15-16-5. ArXiv: 1907.05378.

Preprints

· "Quantum-Classical Tradeoffs in the Random Oracle Model",
In submission, 2022.
Yassine Hamoudi, Qipeng Liu and Makrand Sinha.
ArXiv: 2211.12954.

TALKS

Invited talks and courses

· Invited speaker at the *American Physical Society (APS) March Meeting*, Las Vegas, United States, March 2023.

· Lecturer at the Park City Mathematics Institute (PCMI) Graduate Summer School on Quantum Computation, Princeton, United States, July 2023 (upcoming event).

Conference talks

· *International Conference on Quantum Information Processing (QIP)*, Ghent University, Belgium, February 2023. Video: `https://www.youtube.com/watch?v=BI3hi3p-jsg`.

· *European Symposium on Algorithms (ESA)*, Hasso Plattner Institut, Germany, 7 September 2022 (virtual). Video: `https://youtu.be/EIO2dxqVQ8U`.

· *Symposium on Theory of Computing (STOC)*, Rome, Italy, 20 June 2022. Video: `https://youtu.be/DO0VreIL9so`.

· *European Symposium on Algorithms (ESA)*, Instituto Superior Técnico, Portugal, 7 September 2021 (virtual). Video: `https://youtu.be/dlvme3gUJcY`.

· *Conference on the Theory of Quantum Computation, Communication and Cryptography (TQC)*, University of Latvia, 6 July 2021 (virtual). Video: `https://youtu.be/eXvznaL2d-M`.

· *International Colloquium on Automata, Languages and Programming (ICALP)*, University of Patras, Greece, 9 July 2019.

· *International Symposium on Mathematical Foundations of Computer Science (MFCS)*, University of Liverpool, United Kingdom, 27 August 2018.

Seminars

- *COSMIQ Seminar*, INRIA Paris, France, 30 January 2023.
- *Quantum Information Seminar*, LIP6, France, 8 December 2022.
- *GT Info-Quantique*, LaBRI, France, 6 December 2022.
- *CAPP Seminar*, LIG, France, 30 November 2022.
- *QInfo Seminar*, École normale supérieure de Lyon, France, 28 November 2022.
- *Stanford Theory Lunch*, Stanford University, United States, 9 June 2022.
- *Quantum Brainstorming Session*, Simons Institute for the Theory of Computing, United States, 19 November 2021.
- *GT Info-Quantique*, LaBRI, France, 9 November 2021 (virtual).
- *QuSoft Seminar*, CWI, Netherlands, 8 October 2021 (virtual).
- *Bristol QIT Seminar*, University of Bristol, United Kingdom, 4 March 2020.
- *Centre for Quantum Technologies Seminar*, CQT, NUS, Singapore, 6 March 2019.

Workshops

- *Quantum Algorithms and Complexity*, IQC, University of Waterloo, Canada, 25 October 2019.
- *Quantum Algorithms and Applications* (QUANTALGO), CWI, Netherlands, 18 September 2019.
- *Quantum Algorithms for Massive Data* (QUDATA), IRIF, France, 10 January 2019.
- *Journées Informatique Quantique* (JIQ), Loria, France, 8 November 2018.
- *Quantum Algorithms and Applications* (QUANTALGO), IRIF, France, 25 September 2018.

OTHER RESEARCH ACTIVITIES

Program committees and reviewer

- Program committee member: QTML 2022, TQC 2023.
- Conference reviewer: FOCS 20,21; FSTTCS 20,21; ICALP 19,21,22,23; ITCS 20; MFCS 18,21,22; QIP 21,22,23; SAC 21; SoCG 22; SODA 21,22,23; STACS 21,23; STOC 23; TQC 22.
- Journal reviewer: Algorithmica, Discrete Mathematics & Theoretical Computer Science (DMTCS), IEEE Transactions on Computers (TC), International Journal of Quantum Information (IJQI), Quantum, Quantum Information & Computation (QIC).

Invited visits

- Columbia University, United States, October 2022.
- University of Bristol, United Kingdom, March 2020.

· University of Waterloo, Canada, October 2019.

· Centre for Quantum Technologies, Singapore, April–June 2017, February–June 2019.

· Carnegie Mellon University, United States, January–June 2016.

Seminar organization

· Organizer of the group seminar "Algorithms and Complexity" at IRIF from 2017 to 2021. List of all sessions at: `https://www.irif.fr/en/seminaires/algocomp/`.

Co-developer of a question-answering system

· Development of a natural language question-answering system from 2014 to 2017. Project's website at: `http://projetpp.github.io/`. Acquired by LEXISTEMS in 2017.