

Matteo Lostaglio

Address Wagenaarstraat 460
1093EA, Amsterdam
Nationality Italian

Mobile Phone +31 644093763
Email lostaglio@protonmail.com
Website <https://lostaglio.weebly.com/>
Orcid [0000-0003-1942-2417](https://orcid.org/0000-0003-1942-2417)

Employment

- 2022-now** Quantum Applications Architect at [PsiQuantum](#)
- 2021** Postdoctoral researcher UvA and QuSoft.
- 2020-2021** Postdoctoral researcher at QuTech – TU Delft
- 2017-2020** Marie Skłodowska-Curie Individual Fellow at ICFO, The Institute of Photonic Sciences
- 2016-2017** Postdoctoral researcher, The Institute of Photonic Sciences

Education

- 2013-2016** **Ph.D.** in Controlled Quantum Dynamics - Imperial College London
Mentors: Dr. David Jennings and Prof. Terry Rudolph
- 2012-2013** **Master of Research** in Controlled Quantum Dynamics - Imperial College London
Mentors: Prof. Terry Rudolph and Dr. David Jennings
- 2010-2012** **Master** in Physics - University of Pavia. *Mentors:* Dr. Julian Barbour, Prof. Flavio Mercati.
- 2007-2010** **Bachelor** in Physics - University Pavia
- 2007-2012** **Diploma** - Institute for Advanced Studies of Pavia (IUSS). *Mentors:* Prof. C. Dappiaggi and Prof. G. Goggi

Papers and preprints

All my articles can be found on the arXiv at the following [link](#).

- 2022 **M. Lostaglio**, A. Belenchia, A. Levy, S. Hernández-Gómez, N. Fabbri, S. Gherardini, *Kirkwood-Dirac quasiprobability approach to quantum fluctuations: Theoretical and experimental perspectives*, [arXiv: 2206.11783](#).
- 2022 C.-Y. Hsieh, **M. Lostaglio**, A. Acín, *Quantum Channel Marginal Problem*, [Phys. Rev. Research 4, 013249](#)
- 2021 K. Korzekwa, **M. Lostaglio**, *Optimizing thermalizations*, [Phys. Rev. Lett. 129, 040602](#).
- 2021 **M. Lostaglio**, K. Korzekwa, *Continuous thermomajorization and a complete set of laws for Markovian thermal processes*, [Phys. Rev. A 106, 012426](#).
- 2021 **M. Lostaglio**, A. Ciani, *Error mitigation and quantum-assisted simulation in the error corrected regime*, [Phys. Rev. Lett. 127, 200506](#)
- 2021 **M. Lostaglio**, J. Bowles, *The original Wigner’s friend paradox within a realist toy model*, [Proc. R. Soc. A 47720210273](#)
- 2021 K. Korzekwa, **M. Lostaglio**, *Quantum advantage in simulating stochastic processes*, [Phys. Rev. X 11, 021019](#).
- 2020 **M. Lostaglio**, *Certifying quantum signatures in thermodynamics and metrology via contextuality of quantum linear response*, [Phys. Rev. Lett. 125, 230603](#).
- 2020 A. Levy, **M. Lostaglio**, *A quasiprobability distribution for heat fluctuations in the quantum regime*. [PRX Quantum 1, 010309](#).

- 2020 A. Serafini, **M. Lostaglio**, S. Longden, U. Shackerley-Bennett, C. -Y. Hsieh, G. Adesso, *Gaussian Thermal Operations and the Limits of Algorithmic Cooling*, [Phys. Rev. Lett. **124**, 010602](#).
- 2020 **M. Lostaglio**, G. Senno, *Contextual advantage for state-dependent cloning*, [Quantum **4**, 258](#).
- 2020 C.-Y. Hsieh, **M. Lostaglio**, A. Acín, *Entanglement preserving local thermalization*, [Phys. Rev. Research **2**, 013379](#).
- 2019 **M. Lostaglio**, M. P. Müller, *Coherence and asymmetry cannot be broadcast*, [Phys. Rev. Lett. **123**, 020403](#).
- 2019 R. Kunjwal, **M. Lostaglio**, M. F. Pusey, *Anomalous weak values and contextuality: robustness, tightness, and imaginary parts*, [Phys. Rev. A **100**, 042116](#).
- 2019 **M. Lostaglio**, *An introductory review of the resource theory approach to thermodynamics* [Rep. Prog. Phys. **82** 114001](#).
- 2019 Á. M. Alhambra, **M. Lostaglio**, C. Perry, *Heat-Bath Algorithmic Cooling with optimal thermalization strategies*, [Quantum **3**, 188](#).
- 2018 **M. Lostaglio**, *Quantum fluctuation theorems, contextuality and work quasi-probabilities*, [Phys. Rev. Lett. **120**, 040602](#).
- 2018 **M. Lostaglio**, Á. M. Alhambra, C. Perry, *Elementary Thermal Operations*, [Quantum **2**, 52](#).
- 2017 **M. Lostaglio**, K. Korzekwa, A. Milne, *Markovian evolution of quantum coherence under symmetric dynamics*, [Phys. Rev. A **96**, 032109](#).
- 2017 **M. Lostaglio**, D. Jennings, T. Rudolph, *Thermodynamic resource theories, non-commutativity and maximum entropy principles*, [New J. Phys. **19** 043008](#).
- 2016 K. Korzekwa, **M. Lostaglio**, *Classical noise and the structure of minimal uncertainty states*, [Phys. Rev. A **93** 062347](#).
- 2016 K. Korzekwa, **M. Lostaglio**, J. Oppenheim, D. Jennings, *The extraction of work from quantum coherence*, [New J. Phys. **18** 023045](#), New Journal of Physics Highlights of 2016.
- 2015 **M. Lostaglio**, M. P. Müller, M. Pastena, *Stochastic independence as a resource in small-scale thermodynamics*, [Phys. Rev. Lett. **115**, 150402](#), Editors' suggestion.
- 2015 **M. Lostaglio**, K. Korzekwa, D. Jennings, T. Rudolph, *Quantum coherence, time-translation symmetry and thermodynamics*, [Phys. Rev. X **5**, 021001](#).
- 2015 **M. Lostaglio**, D. Jennings, T. Rudolph, *Description of quantum coherence in thermodynamics requires constraints beyond free energy relations*, [Nat. Comm. **6**, 6383](#).
- 2014 K. Korzekwa, **M. Lostaglio**, D. Jennings, T. Rudolph, *Quantum and classical entropic uncertainty relations*, [Phys. Rev. A **89**, 042122](#).
- 2013 J. Barbour, **M. Lostaglio**, F. Mercati, *Scale anomaly as the origin of time*, [Gen. Rel. Gravit. **45**, 5](#), Editors' choice.

Total citations: 2138, h-index: 18. All data from [Google Scholar](#) as of 25.07.2022.

Teaching

- 2021 Entanglement, thermodynamics, algorithms: the quantum information perspective.
21-hour PhD course, U. of Trento (Lecturer)
- 2021 Quantum Thermodynamics summer school 2021, ETH Zurich (Lecturer)
- 2021 Quantum Hardware, TU Delft (Teaching Assistant)
- 2020 A mini-course on Quantum-Information Thermodynamics, U. of São Paulo (Lecturer)
- 2020 Mathematical Methods for Modern Physics, TU Delft (Teaching Assistant)
- 2019 Fundamentals of Quantum Mechanics, African Institute of Mathematical Sciences Cameroon
30-hour master course (Lecturer)
- 2018 Summer course on quantum theory, ACER program, ICFO (Lecturer)
- 2018 ICFO+ Theory Lecture Series 'Single-shot quantum thermodynamics', ICFO (Lecturer)
- 2015 Foundations of Quantum Mechanics, Imperial College London (Teaching Assistant)
- 2014 Quantum Mechanics & Statistics of Measurement, Imperial College London (Teaching Assistant)
- 2014 Introduction to Quantum Information, Imperial College London (Teaching Assistant)

Supervision

- 2021 Supervision of master student Idriss Hank Ngueya Nkouatchoua, African Institute of Mathematical Sciences (AIMS) Cameroon
- 2017–now Co-supervisor of PhD student Chung-Yung Hsieh, ICFO (topics: quantum thermodynamics and quantum information)
- 2015 Co-supervision of Master students Sofia Qvarfort and Henry O’Hagan (topic: “A resource-theoretical approach to time-energy measurements in quantum mechanics”)

Grants

- 2018 Marie Skłodowska-Curie individual fellowship
- 2018 Juan de la Cierva - Formacion fellowship from Spanish Government (declined)
- 2015 Short Term Scientific Mission, European COST MP1209 network
- 2014 Angelo Della Riccia scholarship for studies in microphysics
- 2013 Maria Rossi scholarship to pursue research abroad
- 2012 Ghislieri – St. Hugh’s College joint scholarship for master thesis in Oxford

Research highlights

Editor’s suggestions:

- [Phys. Rev. Lett. 129, 040602 \(2022\)](#),
- [Phys. Rev. A 106, 012426 \(2022\)](#),
- [Phys. Rev. Lett. 115, 150402 \(2015\)](#),
- [Gen. Rel. Grav. 45, 911-938 \(2013\)](#)

Press:

- 2022 *Physics*’ viewpoint [Taking Smooth Steps Toward Equilibrium](#) on our works on [Optimizing Thermalizations](#) and [Continuous Thermomajorization](#)
- 2021 *Physics*’ feature [PRX–Ten Years After](#). PRX celebrates its 10th anniversary by highlighting seminal articles published since the journal’s launch includes our [2015 PRX work](#).
- 2020 *Quantum Views* perspective article in ‘What is non-classical about quantum no-cloning?’ on our work [Contextual advantage for state-dependent cloning](#).
- 2019 *Quantum Views* perspective article ‘[Optimal Heat-Bath Algorithmic Cooling](#)’ on our work [Heat bath algorithmic cooling](#).
- 2016 *Physics*’ viewpoint “[New Entry in the Thermodynamic Rulebook for Quantum Systems](#)” on our Phys. Rev. X work [Quantum coherence, time-translation symmetry and Thermodynamics](#)

Other highlights:

- New Journal of Physics [Highlights of 2016](#) for the work [The extraction of work from quantum coherence](#)
- QIP 2022 talk for the work [Optimizing thermalizations](#)
- QIP 2019 talk for the work [Heat bath algorithmic cooling with optimal thermalization strategies](#)
- Best poster prizes: 5th Q. Thermodynamics conference, U. of Oxford (2017) and Winter School Physics of Small Quantum Systems: Thermal and Topological Phenomena, U. of Aalto and Jyväskylä (2015)

Other awards

- 2021 **National Scientific Qualification** (Abilitazione Scientifica Nazionale) for positions of Associate Professor in Italian universities, Italian Ministry of University and Research.
- 2016 **Forbes 30 under 30 Europe list** under the section [Science and Healthcare](#)
- 2015 **Faculty of Natural Sciences Prize for Excellence in the Support of Teaching & Learning** awarded for “a major contribution to the support of learning and teaching within the Faculty of Natural Sciences at Imperial College London”
- 2007 **Excellent Student prize** from Italian Ministry of Education

Talks and seminars

- 2021 Oct. Max Planck Institute for Quantum Optics, Theory division
 Oct. Psi Quantum
 Oct. Quantum Thermodynamics Conference 2021, University of Geneva
 May. Paris-Singapore-Tokyo Workshop “Quantum Metrology, Networks and Cryptography”
 Apr. Q@TN Lab Seminars, University of Trento
 Mar. Quantum Chaos and Information Seminars, Jagiellonian U., Krakov
 Feb. The Cavendish Quantum Information Seminars, University of Cambridge
- 2020 May Quantum Information & Quantum Computing working group, Warsaw U. of Technology
 Apr. Quarantine Thermodynamics Series
- 2019 Dec. ICTQ, University of Gdasińk
 Oct. Quantum Speed Limits and Thermodynamics 2019, Bilbao
 Sep. Italian Quantum Information Conference, Milan
 Jun. QuTech, Delft
 Jun. CWI, Amsterdam
 Apr. Cryptography and Quantum information group, USI, Lugano
 Jan. GIQ group Universitat Autònoma de Barcelona
- 2018 Nov. Institute for Quantum Optics and Quantum Information (IQOQI), Vienna
 Oct. Centre for Engineered Quantum Systems, University of Sydney
 Sep. Istituto Nazionale Ricerca Metrologica, Torino
 Jun. Quantum Thermodynamics conference, Kavli Institute for Theor. Phys., U. of California
 May. Institute for Quantum Optics and Quantum Information (IQOQI), Vienna
 Mar. GIQ group Universitat Autònoma de Barcelona
- 2017 Nov. Perimeter Institute for Theoretical Physics
 Oct. National Quantum Information Center of Gdańsk
 Sep. QIT group U. of Pavia
 Sep. Workshop on Applied Quantum Mechanics, U. of Milan
 Sep. 10th Italian Quantum Information Science Conference, Florence
 Apr. British Applied Mathematics Colloquium, U of Surrey
 Mar. 5th COST Conference on Quantum Thermodynamics, U. of Oxford
 Mar. IV Pyrenees Winter School
- 2016 Apr. University of Trento Physics Department
 Apr. Hebrew University of Jerusalem, Institute of Chemistry
 Mar. APS March Meeting, Baltimore
 Feb. QIT group Institute for Photonic Sciences (ICFO), Barcelona
- 2015 Nov. Institute of Theoretical Physics, U. of Ulm
 Aug. California Institute of Technology, Institute for Quantum Information and Matter (IQIM)
 Jul. University of Nottingham
 Jun. University College London
 May. University of Pavia
 Apr. Quantum Thermodynamics Conference, U. of Balearic Islands
 Jan. Advisory Board Meeting CDT in Controlled Quantum Dynamics, Imperial College London
- 2014 Nov. Colleges of London Quantum Information meeting, Imperial College London
- 2013 Jul. Loops 2013, Perimeter Institute for Theoretical Physics

Other activities

Referee	Physical Review X, Physical Review Letters, Physical Review A, Physical Review E, Quantum (over 30 reviews)
Program committee	Quantum Thermodynamics conference QTD 2022
Co-Organiser	Quantum Information, Computation and Control (QuICC) summer school held at Imperial College London, 26 th – 29 th August 2013
Fundraising	Supporting African Maths Initiative (SAMI) in 2016
Outreach	Show “Amazing Quantum Worlds” at Imperial College London in January 2013, May 2013, May 2014. Science Busking at Imperial Festival at Imperial College London in May 2013.

Language skills

Italian (mother tongue), English (fluent), Spanish (basic).