PERSONAL INFORMATION

Dario Tamascelli

POSITION

Professore Associato (Associate Professor)
(SC: 02/B2, SSD: FIS/03), Dipartimento di Fisica “Aldo Pontremoli”, Università degli Studi di Milano

WORK EXPERIENCE

Since January 2023

Professore Associato (Associate Professor)

Dipartimento di Fisica “Aldo Pontremoli”, Università degli Studi di Milano

- Research: quantum computation, open quantum systems, quantum simulation.
- Teaching: Programming, Undergraduate Course, Physics

SC: 02/B2, SSD FIS/03

From September 2014
To December 2022

Ricercatore confernato (Assistant Professor)

Dipartimento di Fisica “Aldo Pontremoli”, Università degli Studi di Milano

SC: 01/B1, SSD: INF/01

Since September 2014

Visiting researcher

Institut fürTheoretische Physik, Ulm Universität, Ulm, Germany

- Analysis and Simulation of Open Quantum Systems.

From September 2007 to August 2014

Ricercatore confernato (Assistant Professor)

Dipartimento di Informatica, Università degli Studi di Milano

- Research: Quantum Computation.
- Teaching: Programming, Probability and Statistics.

Scietific Area INF/01

EDUCATION AND TRAINING

March 2007

Ph. D. in Applied Mathematics (Matematica e Statistica per le scienze computazionali)

Università degli Studi di Milano

- Quantum Mechanics, Stochastic Processes, Advanced Statistical Methods, Numerical Analysis.

May 2003

Master Degree in Computer Science (Laurea in Informatica)

Università degli Studi di Milano

September 2001-Fabruary 2002

Erasmus Sojourn

Branderburgische Technische Universität, Cottbus, Germania

PERSONAL SKILLS

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Mother tounge: Italian

Other languages

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken Interaction	Spoken Production	
English	C2	C2	C2	C2	C2
German	A2	A2	A1	A1	A2

Levels: A1/A2: Basic user - B1/B2: Independent user - C1/C2 Proficient user
Common European Framework of Reference for Languages

Communication skills

- Excellent communication skills acquired during my research and teaching activities.

Organisational / managerial skills

- Research projects management.
- Research group supervision.

Job-related skills

- Advanced knowledge in various research areas such as Quantum Computation, Stochastic Processes, Quantum Transport, Quantum Biology, Quantum Simulation, Open Quantum Systems, Quantum Metrology, Density Functional Theory.

Digital skills

SELF-ASSESSMENT				
Information processing	Communication	Content creation	Safety	Problem solving
Proficient User	Proficient User	Proficient User	Independent User	Proficient User

Levels: Basic user - Independent user - Proficient user
Digital competences - Self-assessment grid

- Proficient command of office suite (word processor, spread sheet, presentation software).
- Proficient command of photo editing and imaging software acquired the production of scientific publications and as amatour photographer.
- Proficent knowledge of the C, C++, CUDA C, Fortran, Python and Julia programming languages.
- Proficient knowledge of the Mathematica software/language.
- Proficient knoledge of the Matlab software/language.

Other skills

- Image manipulation.
- GPU programming

Driving licence: A and B

ADDITIONAL INFORMATION

Publications

2023 C. Vittmann, J. Lim, D. Tamascelli, S.F. Huelga, M.B. Plenio, Spin-depentent momentum conservation of electron-phonon scattering in chirality-induced spin selectivity, J. Phys. Chem. Lett. 14, XXX, 340−346.

2022 A. Smirne, D. Tamascelli, J. Lim, S.F. Huelga, M.B. Plenio, Non-perturbative treatment of open-system multi-time expectation values in Gaussian bosonic environments, Open Systems & Information Dynamics 29(4), 2250019.

2022 A. Nuessler, D. Tamascelli, A. Smirne, J. Lim, S.F. Huelga, M.B. Plenio, Fingerprint and universal Markovian closure of structured bosonic environments, Phys. Rev. Lett. 129(14), 140604.

2022 M. Annabestani, M. Hassani, D. Tamascelli, M.G. A. Paris, Multiparameter quantum metrology with discrete-time quantum walks, Phys. Rev. A 105(6), 062411.

2022 A. Fallani, M.A.C. Rossi, D. Tamascelli, M.G. Genoni, Learning feedback control strategies for quantum metrology, Phys. Rev. X Quantum 3(2), 020310.

2021 C. Benedetti, D. Tamascelli, M.G.A. Paris, A. Crespi, Quantum spatial search in two-dimensional waveguide arrays, Phys. Rev. Appl. 16(5), 054036.

2020 S. Bigoni, M.L.V. Tagliaferri, D. Tamascelli, S. Strangio, R. Bez, P. Organtini, G. Ferrari, E. Prati, Observation of single phonon-mediated quantum transport in a silicon single-electron CMOS single-atom transistor by RMS noise analysis, Appl. Phys. Expr., 13(12), 125001.

2020 M.A.C. Rossi, F. Albarelli, D. Tamascelli, M.G. Genoni, Noisy quantum metrology by continuous nondemolition measurement, Phys. Rev. Lett., 125(20), 200505.

2020 D. Tamascelli, Excitation dynamics in chain-mapped environments, Entropy, 22(11), 1320.

2020 F. Mascherpa, A. Smirne, A. D. Somoza, P. Fernández-Acebal, S. Donadi, D. Tamascelli, S. F. Huelga, M. B. Plenio, Optimized auxiliary oscillators for the simulation of general open quantum systems, Phys. Rev. A, 101, 0502108.

2020 D. Tamascelli, C. Benedetti, H.P. Breuer, M.G.A. Paris, Quantum probing beyond pure dephasing, New J. Phys. 22, 083027.

2019 S. Cialdi, C. Benedetti, D. Tamascelli, S. Olivares, M.G.A. Paris, B. Vacchini, Experimental investigation of the effect of classical noise on quantum non-Markovian dynamics, Phys. Rev. A, 100, 052104.

2019 R. Porotti, D. Tamascelli, M. Restelli, E. Prati, Reinforcement learning based control of coherent transport by adiabatic passage of spin qubits, J. Phys.: Conf. Series, 1275, 012019.

2019 D. Tamascelli, A. Smirne, J. Lim, S.F. Huelga, M.B. Plenio, Efficient simulation of finite-temperature open quantum systems, Phys. Rev. Lett., 123, 090402.

2019 R. Porotti, D. Tamascelli, M. Restelli, E. Prati, Coherent transport of quantum states by deep reinforcement learning, Comm. Phys., 2, 1.

2019 D. Ferracin, A. Mattioni, S. Olivares, F. Caycedo-Soler, D. Tamascelli, Which-way interference within biomimetic unit-cells for efficient energy transfer, Phys. Rev. A, 99, 062505.

2019 S. Campbell, M. Popovic, D. Tamascelli, B. Vacchini, Precursors of non-Markovianity, New J. Phys., 21, 053036.

2018 F. Albarelli, M.A.C. Rossi, D. Tamascelli, M.Genoni, Restoring Heisenberg scaling in quantum metrology by monitering the environment, Quantum, 2, 110.

2018 A. Lemmer, C. Cormick, D. Tamascelli, T. Schaetz, S. F. Huelga, M. B. Plenio, A trapped-ion simulator for spin-boson models with structured environments, New J. Phys, 20, 073002.

2018 C. Porto, D. Rusca, S. Cialdi, A. Crespi, R. Osellame, D. Tamascelli, S. Olivares, and M.G.A. Paris, Detection of squeezed light with glass-

integrated technology embedded into a homodyne detector setup, JOSA B, 35, 1596-1602.

2018 D. Tamascelli, A. Smirne, S. F. Huelga, M. B. Plenio, Nonperturbative Treatment of non-Markovian Dynamics of Open Quantum Systems, Phys. Rev. Lett., 120, 030402.

2018 L. Kohn, F. Tschirsich, M. Keck, M. B. Plenio, D. Tamascelli, S. Montangero, Probabilistic low-rank factorization accelerates tensor network simulations of critical quantum many-body ground states, Phys. Rev. E, 97, 013301.

2017 D. Tamascelli, A. Segati, S. Olivares, Dephasing assisted transport on a biomimetic ring structure, Int. J. Quant. Inf, 15,1740006.

2017 S. Cialdi, M.A.C. Rossi, C. Benedetti, B. Vacchini, D. Tamascelli, S. Olivares, M.G.A. Paris, All-optical quantum simulator of qubit noisy channels, Appl. Phys. Lett.,110, 081107.

2016 D. Tamascelli, C. Benedetti, S. Olivares, M.G.A. Paris, Characterization of qubit chains by Feynman probes, Phys. Rev. A, 94, 042129.

2016 D. Tamascelli, S. Olivares, S. Rossotti, R. Osellame, M.G.A Paris, Quantum State Transfer via Bloch Oscillations, Sci. Rep, 6: 26054.

2015 D. Tamascelli, R. Rosenbach and M.B. Plenio, Improved scaling of Time-EvolvingBlock-Decimation algorithm through Reduced-Rank Randomized Singular Value Decomposition, Phys. Rev. E, 91: 063306.

2014 D. Tamascelli and L. Zanetti, A quantum-walk-inspired adiabatic algorithm for graph isomorphism, J. Phys. A: Math. Theor.,42,325302.

2014 D. Tamascelli, F.S. Dambrosio, R. Conte, M. Ceotto, Graphics processing units accelerated semiclassical initial value representation molecular dynamics, J.Chem. Phys., 140,174109.

2013 D. de Falco and D. Tamascelli, Noise-assisted quantum transport and computation, J. Phys. A: Math. Theor. 46, 225301.

2012 D. de Falco and D. Tamascelli, Time-dependent density-functional theory for open spin systems, Phys. Rev. A, 85, 022341.

2011 D. de Falco and D. Tamascelli, Dissipative dynamics of a spin system with three-body interaction, J. Phys. A: Math. Theor., 44, 325303.

2011 D. de Falco and D. Tamascelli, An Introduction to Quantum Annealing, RAIRO: Theoretical Informatics and Applications, 45, 99.

2011 D. de Falco, E. Pertoso, D. Tamascelli, DissipativeQuantumAnnealing, Proc. 29th Conference: Quantum Probability and White Noise Analysis, 25. Singapore: World Scientific.

2009 D. de Falco and D. Tamascelli, Quantum annealing and the Schrödinger-Langevin-Kostin equation, Phys. Rev. A, 79, 012315.

2008 D. de Falco and D. Tamascelli,Dynamical kickback and noncommuting Impurities in a spin chain, Int. J. Quant. Inf., 6, 807.

2008 D. de Falco and D. Tamascelli, Quantum Walks: a Markovian perspective. - In: SOFSEM 2008: Theory and Practice of Computer Science, Lecture Notes in Computer Science, 4910. Berlin: Springer.

2006 D. de Falco and D. Tamascelli, Entropy generation in a model of reversible computation, RAIRO: Inf. Theor. Appl., 40, 93.

2006 D. de Falco and D. Tamascelli, Speed and entropy of an interacting continuous time quantum walk, J. Phys. A: Math. Gen., 39, 5873.

2004 D. de Falco and D. Tamascelli, Quantum timing and synchronization problems, Int. J. Mod. Phys. B, 18, 623.

2004 D. de Falco and D. Tamascelli, Grover algorithm on a Feynman computer, J. Phys. A: Math. Gen., 37, 90.

Books

A.M. Zanaboni,D. de Falco and D. Tamascelli, Problemi di Probabilitàe Statistica per le Lauree Triennali.-Napoli:Liguori,2009.

Conferences

Feb. 2020 QQQ Conference, Milano, Italy, Invited Talk.
Dec. 2019 AQM Workshop, MIlano, Italy, Invited Talk.
Apr. 2019 Complex Quantum Systems conference, Venice, Italy, Contributed Talk.
Dec. 2018 WE- Heraeus-Seminar: Advances in open systems and fundamental tests of quanum mechanics, Bad-Honnef, Germany, Poster.
Nov. 2018 QTech Fall Workshop, Milano, Italy, Invited Talk.
Feb. 2018 Quantum Computation and Simulation Workshop, Bilbao, Spain, Contributed Talk.
Sep. 2017 AQM Workshop 2017, Varazze, Italy,Invited Talk.
Sep. 2017 IQIS 2017, Firenze, Italy, Contributed Talk.
Sep. 2016 IQIS 2016, Rome, Italy Poster.
Jun. 2016 AQM Workshop, Venice, Italy Invited Talk.
Jun. 2015 AQM Workshop, Modena, Italy Invited Talk.
Jun. 2015 QUEBS 2015, Florence Poster.
Nov. 2013 Quantum Simulation and Quantum Walks, Pisa, Italy Contributed Talk.
Oct. 2013 Noise Information and Complexity at the Quantum Scale, Communication at the Quantum Scale, Erice, Italy.
Oct. 2011 Wave-Function Monte Carlo methods Invited Seminar. Politecnico di Milano, Milano, Italy.
Jan. 2010 QIP'10, Zurich, Switzerland Poster.
Sep. 2009 QIPC'09, Rome, Italy, Poster.
Sep. 2009 ICTCS'09, Cremona, Italy, Contributed Talk.
Oct. 2008 Quantum Probability and White Noise Analysis, Hammamet, Tunisia, Contributed Talk.
Oct. 2008 IQIS'08, Camerino, Italy, Contributed Talk.
Jan. 2008 SOFSEM'08, Current Trends in Theory and Practice of Computer Science, Novy Smokovec, Slovakia, Contributed Talk.
Nov. 2007 Noise, Information and Complexity at Quantum Scale, Erice, Italy, Poster.
Oct. 2006 Interacting Quantum Walks, UCL London, UK, Invited Seminar
Oct. 2006 QIPC'06, London, UK.
Jun. 2006 Workshop on Theory and Technology in Quantum Information, Communication, Computation and Cryptography, Abdus Salam International Center for Theoretical Physics, Trieste, Italy.
Jan. 2006 QIP'06, Paris, France.

Feb. 2005 STACS'05, Symposium on Theoretical Aspects of Computer Science, Stuttgart, Germany.
Jan. 2005 QIP'05, Boston, U.S.
Jun. 2004 Entropy and Relative Entropy in the Mathematical, Physical and Engineering Sciences Workshop, Padova, Italy.

Seminars and Schools

Jul. 2018,Invited Lectures: "Efficient simulation of (open) quantum systems", Summer School, "Out of equilbrium complex quantum systems", Como, Italy.

May 2018, Invited seminar :"Simulating spin boson models with trapped ions: a non-perturbative Approach", Queen's University, Belfast, UK.

Mar. 2018, Invited seminar: "Thermalized TEDOPA", Ulm Universität, Ulm, Germany.

Projects

2021 "Sviluppo UniMi"-Università degli Studi di Milano, Quantum Information Transport Through Special Point Defects in Silicon.

2019 "Sviluppo UniMi"- Università degli Studi di Milano, Machine Learning for Quantum Feedback Control.

2018 "Sviluppo UniMi"-Università degli Studi di Milano, Realistic Quantum Metrology via Time-Continuous Measurements

2017 "Sviluppo UniMi"-Università degli Studi di Milano, Continuous-variable open quantum systems with integrated quantum photonics.

2016 TEDDI, CINECA High Performance Computing Center, Time Evolving Density Matrix with Orthogonal Polynomials Algorithm (TEDOPA) for distributed infrastructures.

2016 "Sviluppo UniMi"-Università degli Studi di Milano, Continuous-variable quantum technology with integrated quantum photonics.

2016 COST, Short Term Scientific Mission Grant-COST-STSM-ECOST-STSM-MP1403-210216-071740, Simulation of open quantum systems dynamics via Spectral Density decomposition.

2015 NVIDIA Hardware donation Grant-Università degli Studi di Milano, GPU-Based Time Evolving Block Decimation Algorithm for the simulation of open quantum systems.

2015 "Sviluppo UniMi"-Università degli Studi di Milano, Programmable optical devices for quantum transport.

2014 "Sviluppo UniMi"-Università degli Studi di Milano, Application of continuous-variable non-classical states for the application in quantum information protocols.

2013/15 LISA Grant, CINECA High Performance Computing Center. Design of New material for the reduction of pollutant through quantum and semi-classical computational methods.

2009 Young Researcher Starting Grant-Università degli Studi di Milano

2007 “PUR”- Università degli Studi di Milano

Memberships

Dal 2014- Quantum Technology Lab, Dipartimento di Fisica “Aldo-Pontremoli”, Università degli Studi di Milano.
Dal 2014- Institut für Theoretische Physik, Ulm Universität, Ulm (Germany).

Bachelor,Master,PhD Courses

2020-21 Strutture Dati e Algoritmi per la Fisica dei Dati, Laurea Magistrale in Fisica, UniMi
Since 2007- Programming (C/C++), Corso di Laurea in Fisica, UniMi
2012-2014 C Programming, Laurea Magistrale in Chimica, UniMi
2009-11 Probabilistic Methods, Laurea Magistrale in Informatica, UniMi
2007 Statistics, Laurea Triennale in Ingegneria Gestionale, Politecnico di Milano.

2015-16 Coherent phenomena, Ph. D. Course, Ph. D. Program in Physics and Astronomy, UniMi
2012-14 Computational Physics (Probabilistic and Advanced Statistical Methods), Ph. D. Course, Ph. D. Program in Physics and Astronomy, UniMi.

Personal information

I authorize the handling of personal information in this curriculum, according to D.Lgs n. 196/03 and following modifications and Regulations EU 679/2016 (General Regulations concerning Data Protection or GRDP) and art. 7 of University Regulations concerning protection of personal information.

I authorize, according to D.lgs 14/03/2013 n. 33 concerning transparency, in case of conferment of the position and of the fellowship, the publication of this curriculum in the web site of Università degli Studi di Milano in the section “Amministrazione trasparente”, “Consulenti e collaboratori”.

Date, November 8-th 2018

Signature