

Gianluca Teza

curriculum vitae

Department of Physics, University of Trieste
Strada Costiera 11, 34151 Trieste, Italy

+39 0405 558 5252

✉ gianluca.teza@units.it

🆔 0000-0002-4341-6036

🌐 LLFZV2cAAAAJ



Personal Information

Name and Surname: Gianluca Teza

Citizenship: Italian

Work email (UniTS): gianluca.teza@units.it

Work email (MPI): teza@pks.mpg.de

Career

Mar 2026 – 2029 **Assistant Professor to a tenured position (RTT)**, *University of Trieste, Italy*

Jun 2024 – Feb 2026 **Distinguished PKS Fellow**, *Max Planck Institute for the Physics of Complex Systems, Germany*, Wissenschaftlicher Mitarbeiter – Tarif- vertrag für den öffentlichen Dienst (TVöD) **E14**

Nov 2022 – Jun 2024 **Senior Postdoc Fellow**, *Weizmann Institute of Science, Israel*

Mar 2020 – Nov 2022 **Excellence Postdoc Fellow**, *Weizmann Institute of Science, Israel*

Hosts: Prof. Gregory Falkovich, Prof. Oren Raz

Academic Education

24 Feb 2020 **Ph.D. in Physics**, *University of Padova, Italy*, Grade: Summa cum Laude

Thesis title: From an entropy of the Growth to the growth of entropy production

Supervisor: Prof. Attilio L. Stella

28 Sep 2016 **M.Sc. in Theoretical Physics**, *University of Padova, Italy*, Grade: 110/110 cum Laude

Thesis title: Economic growth as a problem of complex systems dynamics

Supervisor: Prof. Attilio L. Stella

16 Jul 2013 **B.Sc. in Physics**, *University of Padova, Italy*, Grade: 110/110

Thesis title: Symmetrical double well potential: the ammonia molecule

Supervisor: Prof. Flavio Toigo

Publications details

Google Scholar Citations: 716; h-index: 13; i10-index 14 [timestamp 04/09/2026]

- Highlights:
- 7 Phys. Rev. Lett. [6 first/corresponding author; 2 editors suggestions; 1 viewpoint; 1 outreach to the press; one selected for *PRL collection of the Year 2024*]
 - 1 Nature Communications [first and corresponding authors]
 - 1 Phys. Reports [first author]
 - 1 Nucl. Acids Res.

Detailed List:

- [1] F. Campaioli, M. Avesani, O. Raz, R. Moessner, and G. Teza, "Validation and calibration of quantum hardware through the many-body quantum mpemba effect", arXiv preprint arXiv:2608.01788, 10.48550/arXiv.2608.01788.
- [2] G. Teza, F. Campaioli, M. Avesani, and O. Raz, "Finite-temperature criticality through quantum annealing", Nature Communications, 10.1038/s41467-026-75348-3 (2026).
- [3] Y.-M. Hu, Y.-B. Shi, L. Li, G. Teza, C. H. Lee, R. Moessner, S. Zhang, and S. Mu, "Boundary floquet control of bulk non-hermitian systems", arXiv preprint arXiv:2603.22396, 10.48550/arXiv.2603.22396 (2026).
- [4] N. Beato and G. Teza, "Relaxation control of open quantum systems", Phys. Rev. Lett. **136**, 070401 (2026).
- [5] G. Teza, A. L. Stella, and T. GrandPre, "Coarse-graining via lumping: exact calculations and fundamental limitations", arXiv preprint arXiv:2512.11974, 10.48550/arXiv.2512.11974 (2025).
- [6] G. Teza, J. Bechhoefer, A. Lasanta, O. Raz, and M. Vucelja, "Speedups in nonequilibrium thermal relaxation: mpemba and related effects", Physics Reports **1164**, 1–97 (2026).
- [7] G. Teza and A. L. Stella, "Universal and nonuniversal signatures in the scaling functions of critical variables", Phys. Rev. Lett. **134**, 127102 (2025).
- [8] T. GrandPre, G. Teza, and W. Bialek, "Direct estimates of irreversibility from time series", arXiv preprint arXiv:2412.19772, 10.48550/arXiv.2412.19772 (2024).
- [9] R. Yaacoby, O. Raz, and G. Teza, "Far from equilibrium relaxation in the weak coupling limit", arXiv preprint arXiv:2203.11644, (**under review by Phys. Rev. Lett.**), 10.48550/arXiv.2203.11644 (2024).
- [10] S. Aharony Shapira, Y. Shapira, J. Markov, G. Teza, N. Akerman, O. Raz, and R. Ozeri, "Inverse mpemba effect demonstrated on a single trapped ion qubit", Phys. Rev. Lett. **133**, (**Chosen for Editor's Suggestion highlight, for a Viewpoint in the magazine Physics and selected for PRL's Collection of the Year 2024**), 010403 (2024).
- [11] G. Teza, R. Yaacoby, and O. Raz, "Relaxation shortcuts through boundary coupling", Phys. Rev. Lett. **131**, (**Chosen for the outreach to the press by the APS**), 017101 (2023).
- [12] A. L. Stella, A. Chechkin, and G. Teza, "Anomalous dynamical scaling determines universal critical singularities", Phys. Rev. Lett. **130**, 207104 (2023).
- [13] A. L. Stella, A. Chechkin, and G. Teza, "Universal singularities of anomalous diffusion in the richardson class", Phys. Rev. E **107**, 054118 (2023).
- [14] G. Teza, R. Yaacoby, and O. Raz, "Eigenvalue crossing as a phase transition in relaxation dynamics", Phys. Rev. Lett. **130**, (**Phys. Rev. Lett. Editor's Suggestion**), 207103 (2023).
- [15] R. Arbel-Goren, S. A. McKeithen-Mead, D. Voglmaier, I. Afremov, G. Teza, A. D. Grossman, and J. Stavans, "Target search by an imported conjugative dna element for a unique integration site along a bacterial chromosome during horizontal gene transfer", Nucleic acids research, gkad068 (2023).
- [16] G. Teza, M. Caraglio, and A. L. Stella, "Entropic measure unveils country competitiveness and product specialization in the world trade web", Scientific reports **11**, 10189 (2021).
- [17] G. Teza and A. L. Stella, "Exact coarse graining preserves entropy production out of equilibrium", Phys. Rev. Lett. **125**, 110601 (2020).

- [18] G. Teza, S. Iubini, M. Baiesi, A. L. Stella, and C. Vanderzande, "Rate dependence of current and fluctuations in jump models with negative differential mobility", *Physica A: Statistical Mechanics and its Applications* **552**, Tributes of Non-equilibrium Statistical Physics, 123176 (2020).
- [19] G. Teza, "Out of equilibrium dynamics: from an entropy of the growth to the growth of entropy production", PhD thesis (University of Padova, Feb. 2020).
- [20] G. Teza, S. Suweis, M. Gherardi, A. Maritan, and M. Cosentino Lagomarsino, "Network model of convection-driven social segregation", *Phys. Rev. E* **99**, 032310 (2019).
- [21] G. Teza, M. Caraglio, and A. L. Stella, "Growth dynamics and complexity of national economies in the global trade network", *Scientific reports* **8**, 15230 (2018).
- [22] G. Teza, M. Caraglio, and A. L. Stella, "Data driven approach to the dynamics of import and export of g7 countries", *Entropy* **20** (2018).

Invited Talks at Workshops, Conferences, and Seminars

- 2026 Invited speaker at the workshop on "Dissipative State Preparation" Ortisei, Italy
- 2026 Invited speaker at the conference "Venice meeting on Fluctuations in small complex systems VIII", Venice, Italy
- 2026 Invited speaker for the School for MSc students "From Quantum Matter to Quantum Computers" at MPI-PKS, Dresden, Germany
- 2026 Invited speaker at the workshop "Nonequilibrium Quantum Matter: Quantum simulation, monitoring and emergent order", hosted by the Theoretical Atomic Physics and Synthetic Quantum Systems Group at Eberhard Karls Universität Tübingen, Germany
- 2026 Invited speaker for the Quantum Computing Journal Club at MPI-PKS, Dresden, Germany
- 2025 Invited speaker for the Theoretical Nanophysics Seminar Series at the Ludwig-Maximilians-Universität, München, Germany.
- 2025 Invited speaker at the Statistical and Biological Physics at the Arnold Sommerfeld Center for Theoretical Physics, Ludwig-Maximilians-Universität, München, Germany.
- 2025 Invited speaker at the CECAM Flagship Workshop "Quantum computing for classical complex systems: Opportunities and challenges from soft matter to life sciences." at SISSA (Trieste, Italy).
- 2025 Invited speaker at the CRC conference "Workshop Quantum Mpemba Effects" in Schloss Mickeln (Düsseldorf, Germany).
- 2025 Invited seminar in the Theoretical physics seminar series "Theorie, Modellierung, Simulation", Technische Universität Chemnitz (Chemnitz, Germany).
- 2025 Invited seminar, Laboratoire de Physique Théorique et Modèles Statistiques, Université Paris-Saclay, Orsay, France
- 2025 Invited seminar, Dipartimento di Fisica, Università di Trieste, Trieste, Italy
- 2024 Invited seminar, Departamento de Física Teórica, Universidad Complutense de Madrid, Madrid, Spain
- 2024 Invited seminar, ICAI, Universidad Pontificia Comillas, Madrid, Spain
- 2024 Invited seminar, Seminario NanoTLab, University of Granada, Granada, Spain
- 2024 Invited speaker at the conference "Venice meeting on Fluctuations in small complex systems VII", Venice, Italy
- 2023 Invited speaker at the conference "Fluctuations and first-passage time problems from theory to applications and experiments", NORDITA Institute, Stockholm, Sweden
- 2022 Invited speaker at the workshop "Large deviations, extremes and anomalous transport in non-equilibrium systems", Erwin Shroedinger Institute, University of Vienna, Austria
- 2021 Invited speaker at the conference "Venice meeting on Fluctuations in small complex systems V", Venice, Italy

Organization of Workshops, Conferences, and Scientific Programs

- 2027 Organizer of the Workshop "Detours and Shortcuts outside Equilibrium" (Feb. 2027), MPI-PKS, Dresden (Germany). Duration: 5 days; Number of Participants: 100.
- 2024 Organizer of the SRitp advanced school "Advances in Nonequilibrium Statistical Mechanics" (Feb. 2024), Weizmann Institute of Science. Postponed indefinitely due to current state of war.

Conferences and workshops contributions

- 2025 CompPhys25, 26th International NTZ-Workshop on New Developments in Computational Physics, Leipzig, Germany
- 2025 DPG-Frühjahrstagung (DPG Spring Meeting), Regensburg, Germany
- 2024 CINECA HPCQC2024 Workshop, Bologna Technopole, Bologna, Italy
- 2021 American Physical Society (APS) March meeting, (virtual) USA
- 2019 Statistical Mechanics Day XI, Weizmann Institute of Science, Rehovot, Israel
- 2018 WITSP19 Workshop on Interdisciplinary Topics in Statistical Physics, University of Padova, Italy
- 2018 From Padua to the rest of the World and Back, University of Padova, Italy
- 2018 Sei Spritz Facili - PhD Version, University of Padova, Italy
- 2016 From Padua to the rest of the World and Back, University of Padova, Italy

Attended schools, conferences and workshops

- 2023 Statistical Mechanics Day XIII, Weizmann Institute of Science, Rehovot
- 2022 Venice meeting on Fluctuations in small complex systems VI, Venice
- 2022 Statistical Mechanics Day XII, Weizmann Institute of Science, Rehovot
- 2021 11th BIU Winter School on 'Cryptography in a Quantum World', (virtual) Israel
- 2020 65th IPS meeting, Weizmann Institute of Science, Rehovot
- 2019 Advances in Complex Systems - From Ecology to Economics - Lake Como School of Advanced Studies, Como
- 2018 Venice meeting on Fluctuations in small complex systems IV, Venice
- 2017 Ninth INFN International School on: "Architectures, tools and methodologies for developing efficient large scale scientific computing applications", Bertinoro
- 2017 Fundamental Problems in Statistical Physics XIV XIV Summer School, Bruneck

Teaching

- 2026-2027 Lecturer of the Master course "Quantitative Methods for Finance" at the University of Trieste, Italy.
- 2026-2027 Lecturer of the Master course "Advanced Complex Systems" at the University of Trieste, Italy.
- 2026-2027 Lecturer of the Master course "Large Deviation and RG theories" at the University of Trieste, Italy.
- 2026 Lecturer at the School for MSc students "From Quantum Matter to Quantum Computers" at MPI-PKS, Dresden, Germany
- 2025-2026 Lecturer of the Master course "Advanced Complex Systems" at the University of Trieste, Italy.
- 2025-2026 Lecturer of the Bachelor course "Data-driven Models For Investment" at the LUISS Guido Carli University, Italy

- 2023-2024 Lecturer of the Master course "Statistical Physics 1" at the Weizmann Institute of Science, Israel (mandatory course for all physics master students at the Weizmann Institute) – postponed due to the state of war
- 2023 Lecturer of the Ph.D. course, *Renormalization Group in statistical mechanics*, Department of Physics and Astronomy, University of Padova, Italy

Awards

- 2025 Ref. [7] was selected for the MPIPKS **Publication Highlights**.
- 2025 Ref. [10] was selected for PRL's **Collection of the Year 2024**.
- 2024 Editor's suggestion for the letter "The Mpemba effect demonstrated on a single trapped ion qubit" (Ref. [10]), which has been selected for inclusion in the American Physical Society's outreach to the press.
- 2024 Spotlight **Viewpoint** published on the APS magazine Physics.
- 2024 "FGS prize for outstanding achievements in postdoctoral research" from the Feinberg Graduate School of the Weizmann Institute of Science.
- 2023 The letter "Relaxation shortcuts through boundary coupling" (Ref. [11]) has been selected for inclusion in the American Physical Society's outreach to the press.
- 2023 Phys. Rev. Lett. Editor's suggestion for the letter "Eigenvalue crossing as a Phase Transition in relaxation dynamics (Ref. [14])

Grants and competitive calls

- 2026-2027 Granted (as Project Administrator) the JUNIQ application for the project "Real-time mitigation of thermal fluctuations in quantum annealers" (code 66415) by Forschungszentrum Jülich.
- 2026-2027 Granted (as Project Administrator) the JUNIQ application for the project "Probing Non-Equilibrium Dynamics in the 2D quantum Ising model with a D-Wave annealer" (code 66414) by Forschungszentrum Jülich.
- 2026 Granted the ISCRA call for the project "Benchmarking Quantum Devices" (code HP10CIS5HP).
- 2024 "QCSC Second Call for Quantum Computing projects" Quantum Computing and Simulations Center, CINECA (Italy). Title of the project: "Towards accelerated annealing on quantum computing and simulation platforms".
- 2024 "Distinguished PKS Fellowship" from the Max Plank Institute for the Physics of Complex Systems, Dresden.
- 2023 "Alexander von Humboldt fellowship within the Henritte Herz program", Max Plank Institute for Multidisciplinary Sciences, Göttingen (declined).
- 2023 "QCSC Preliminary Call for Quantum Computing projects" Quantum Computing and Simulations Center, CINECA (Italy). Title of the project: "Anomalous relaxation phenomena in quantum annealers".
- 2022 "Senior postdoctoral fellowship" from the Weizmann Institute of Science
- 2020 "Faculty postdoctoral excellence fellowship" from the Center for Statistical Mechanics at the Weizmann Institute of Science

Supervised students

- 5 PhD [MPI-PKS, Lund University, co-supervision]
- 8 Master students [Padova University/Weizmann Institute of Science/Bocconi University/École Polytechnique Fédérale de Lausanne (EPFL)/ Trieste University]
- 5 Bachelor students [Padova University/ Trieste University]

Other activities

- Invited to act as Guest Editor for the special issue "Mpemba Effects and Anomalous Nonequilibrium Relaxations in Classical and Quantum Systems" by the Journal of Physics A: Mathematical and Theoretical – Institute of Physics (2025/2026)
- Acted as a referee for the peer-reviewed journals: Physical Review Letters (APS), Physical Review E (APS), Physical Review Research (APS), Communications Physics (Nature Springer), Physica A: Statistical Mechanics and its Applications (Elsevier), Advanced Quantum Technologies (Wiley), Reports on Progress in Physics (IOP), Proceedings of the Royal Society A: Mathematical Physical and Engineering Sciences, Scientific Reports (Nature Portfolio), Journal of Risk and Financial Management, Entropy, Mathematics, Sustainability, Systems.
- Director of Physics for the Bina (Bridge, Innovate, Nurture, Advance) student hub, (knowledge transfer scientific unit of the Weizmann Institute of Science)
- Held several seminars among research groups in Statistical Mechanics, Complex Systems and Biophysics of the University of Padova, the Weizmann Institute of Science and Max Planck Institutes

Languages

Italian	Mother tongue
English	Business fluent
German	Intermediate
Hebrew	Beginner