Lucas Pesenti

ETH Zürich · lpesenti@ethz.ch · lucaspesenti.com

Positions

2026 – 2028 **Postdoctoral Research Fellow, ETH Zürich**
Hosted by Afonso Bandeira.
Project: *Combinatorial and algorithmic methods for random polynomial optimization.*

2025 – 2026 **Scientific Assistant and Postdoctoral Researcher, ETH Zürich**
Hosted by David Steurer.

Education

2021 – 2026 **Ph.D. in Statistics and Computer Science, Bocconi University**
Cum laude. Advisors: Luca Trevisan, Laura Sanità, and Pravesh Kothari.
Thesis: *Algorithms beyond the union bound: polynomial optimization and discrepancy theory.*

2016 – 2021 **B.Sc. and M.Sc. in Computer Science, École normale supérieure**
Parisian Master of Research in Computer Science, highest honors (ranked 1/65). Student and civil servant at ENS; ranked first in the computer science section of the entrance examination.

Research Papers

Preprints

2026 **Matrix concentration and equivalent operators on Fock spaces**
With Afonso Bandeira, Dmitriy Kunisky, Petar Nizić-Nikolac, and Robert Wang

2026 **Convergence of Kikuchi matrices to Γ-independent and q-Gaussian limits**
With Afonso Bandeira, Dmitriy Kunisky, Petar Nizić-Nikolac, and Robert Wang

2026 **The hypergraph Moore bound**
With Afonso Bandeira, Dmitriy Kunisky, Petar Nizić-Nikolac, and Robert Wang

2026 **Norm bounds for sparse random tensors and spectral gap of random hypergraphs**
With Kevin Lucca

2026 **Universality of first-order methods on random and deterministic matrices**
With Nicola Gorini, Chris Jones, and Dmitriy Kunisky

2026 **Agnostic learning in (almost) optimal time via Gaussian surface area**
With Lucas Slot and Manuel Wiedmer

Refereed Publications

2025 **Fourier analysis of iterative algorithms**
With Chris Jones
International Colloquium on Automata, Languages, and Programming (ICALP 2025).

2024 **New SDP roundings and certifiable approximation for cubic optimization**
With Jun-Ting Hsieh, Pravesh K. Kothari, and Luca Trevisan
Symposium on Discrete Algorithms (SODA 2024).

2023 **Discrepancy minimization via regularization**
With Adrian Vladu
Symposium on Discrete Algorithms (SODA 2023).

Selected Talks

Jul. 2025 **Fourier analysis of iterative algorithms**
ICALP, Aarhus

Apr. 2025 **Fourier analysis of random optimization problems**
Johns Hopkins University

Dec. 2024 **On maximizing polynomials**
Workshop in memory of Luca Trevisan, Bocconi University

Oct. 2024 **Understanding iterative algorithms with Fourier diagrams**
DACO seminar, ETH Zürich

Sep. 2024 **Diagram analysis of iterative algorithms**
Roccella Conference on Inference and AI, poster

Feb. 2024 **Up to the constant: Spencer's theorem and random matrices**
University of Pennsylvania

Jan. 2024 **New SDP roundings and certifiable approximation for cubic optimization**
SODA, Washington DC

Jan. 2023 **Discrepancy minimization via regularization**
SODA, Florence

Teaching

2026 **Student seminar: "Curvature for graphs and Markov chains"**
ETH Zürich

2025 **Algorithms and Data Structures**, Head Teaching Assistant
ETH Zürich

2023 – 2024 **Algorithms for Optimization and Inference**, Teaching Assistant
Bocconi University

2023 – 2024 **Analysis of Algorithms and Data Structures**, Teaching Assistant
Bocconi University

2022 – 2023 **Computing Theory and Algorithms**, Teaching Assistant
Bocconi University

2022 **Algorithms**, Teaching Assistant
Bocconi University

Service

Conference reviewing
Symposium on Foundations of Computer Science (FOCS)
Symposium on Theory of Computing (STOC)
Symposium on Discrete Algorithms (SODA)
Symposium on Simplicity in Algorithms (SOSA)
Innovations in Theoretical Computer Science (ITCS)
Conference on Learning Theory (COLT)

Journal reviewing
SIAM Journal on Computing
Journal of the ACM
Mathematical Statistics and Learning
Random Structures & Algorithms

2022 – 2025 PhD representative

2021 – 2023 Organizer of the theoretical computer science reading group

Honors and Awards

2016, 2017 Bronze medals, ACM-ICPC Southwestern Europe Regional Contest

2014 Bronze medal, International Olympiad in Informatics
Ranked first in the French national IOI selection