

Lucas Pesenti

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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 **The hypergraph Moore bound**
With Afonso Bandeira, Tim 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 Tim 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

- 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)
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